



THE GOVERNMENT OF KENYA

MINISTRY OF ENVIRONMENT, WATER AND NATURAL RESOURCES

STATE DEPARTMENT OF WATER

WATER SECURITY AND CLIMATE RESILIENCE PROGRAM (WSCR)

UPDATED VERSION

ENVIRONMENTAL AND SOCIAL MANAGEMENT FRAMEWORK (ESMF)

February 2015

Prepared by: Tito Kodiaga
Senior Environmental Specialist
Water Security and Climate Resilience Project (WSCR)
Project Preparation Team (PPT)
Nairobi, Kenya. Cell: +254-722-579272
Email: tito@emconsultants.org
URL: <http://www.emconsultants.org>

TABLE OF CONTENTS

TABLE OF CONTENTS	2
GLOSSARY OF TERMS	6
ACRONYMS & ABBREVIATIONS	8
EXECUTIVE SUMMARY	11
I INTRODUCTION	30
1.1 Purpose of the ESMF	30
1.2 Rationale for the ESMF.....	31
1.3 Approach for the preparation of ESMF.....	31
1.4 Program Description.....	31
1.4.1 Country and sector context/ Project Concept.....	31
1.5 Sectoral and Institutional Context	32
1.5.1 Relationship to Country Partnership Strategy (CPS).....	33
1.5.2 Proposed Development Objectives (PDOs).....	34
1.5.3 Objectives of the WSCR-1 Project.....	35
1.6 First Water Security and Climate Resilience Project	35
1.6.1 MEWNR/WSCR Components:	35
1.7 Project Institutional and Implementation Arrangements.....	41
1.7.1 Implementation Arrangements.....	43
1.8 Alternative Considerations	45
1.8.1 No Project Scenario.....	45
2 METHODOLOGY AND CONSULTATION	46
2.1 Detailed & In-depth Literature Review	46
2.2 Interactive Discussions.....	46
2.3 Preparation of ESMF.....	46
3 BASELINE DATA	47
3.1 Location and Size	47
3.2 Physical Environment.....	48
3.2.1 Climate.....	48
3.3 Topography and Drainage.....	48
3.3.1 Hydrology	50
3.3.2 Soils and Geology	50
3.4 Land Use	52
3.5 Biological Environment-Ecosystems	52
3.5.1 Grasslands	52
3.5.2 Forests	52
3.5.3 Arid and semi-arid lands (ASALS).....	52
3.5.4 Mountain vegetation	53
3.5.5 Freshwaters and wetlands	54
3.5.6 Marine and coastal areas	54
3.6 Socio-Economic Background.....	59
3.6.1 Population.....	59
3.6.2 Economic Growth & Setting	60
4 DESCRIPTION OF THE ADMINISTRATIVE, POLICY AND REGULATORY FRAMEWORK	63
4.1 The Legal, Regulatory and Policy Framework.....	63
4.1.1 Constitutional provisions	63
4.1.2 Vision 2030.....	64
4.1.3 Environment Management and Coordination Act (No. 8 of 1999), EMCA	64
4.1.4 Occupational Health and Safety Act, 2007.....	66
4.1.5 The Water Act 2002	68
4.1.6 The Wildlife Conservation and Management Act, Cap 376.....	70

4.1.7	<i>Public Health Act Cap 242</i>	70
4.1.8	<i>Physical Planning Act</i>	71
4.1.9	<i>The Forest Act No 7, 2005</i>	71
4.1.10	<i>The Land Act 2012</i>).....	72
4.1.11	<i>The Trust Land Act (CAP 288)</i>	72
4.1.12	<i>Antiquities and Monuments Act, Cap 215 of 1983</i>	72
4.1.13	<i>The Lakes and Rivers Act Chapter 409 Laws of Kenya</i>	72
4.1.14	<i>The Employment Act, 2007</i>	72
4.2	Relevant Sector Policies and Reforms	73
4.2.1	<i>National Policy on Environment and Development Sessional Paper No. 6 of 1999</i> ...	73
4.2.2	<i>The National Environmental Sanitation and Hygiene Policy-July 2007</i>	73
4.2.3	<i>Forest Policy 2005</i>	73
4.2.4	<i>Fisheries Policy</i>	74
4.2.5	<i>Wildlife Policy 2007</i>	74
4.2.6	<i>Wetland Policy 2008 Draft</i>	74
4.3	Water Sector Reforms	75
4.4	Relevant Institutions-Environmental.....	76
4.4.1	<i>Environmental Assessment Administrative/Institutional framework</i>	76
4.5	Autonomous and Semi-Autonomous Government Agencies (SAGAs) Related to the WSCR	
	WSCR	78
4.5.1	<i>Water Sub-Sector</i>	78
4.6	International Environmental and Social Management Requirements	80
5	DESCRIPTION OF WORLD BANK ENVIRONMENTAL & SOCIAL SAFEGUARDS POLICIES AND TRIGGERS	81
5.1	World Bank's Safeguards Likely to be Triggered by WSCR	84
5.1.1	<i>Environmental Assessment (OP4.01)</i>	85
5.1.2	<i>Involuntary Resettlement (OP 4.12)</i>	86
5.2	Alignment of WB and GOK Polices relevant to this ESMF	87
5.3	Requirements for Public Disclosure.....	88
6	DETERMINATION OF POTENTIAL ENVIRONMENT AND SOCIAL IMPACTS	89
6.1	Positive Impacts	89
6.1.1	<i>Employment and Improved Service Delivery</i>	89
6.1.2	<i>Increase Water Supply</i>	89
6.1.3	<i>Increased Food Security</i>	89
6.1.4	<i>Improved economic growth</i>	89
6.1.5	<i>Flood Control and Water Resources Conservation</i>	90
6.1.6	<i>Environmental Protection</i>	90
6.1.7	<i>Create Birdlife Habitat</i>	90
6.1.8	<i>Market Creation</i>	90
6.2	Potential Adverse Impacts.....	90
6.3	Adverse Environmental Impacts	90
6.3.1	<i>Loss of vegetation</i>	90
6.3.2	<i>Change in Hydrology</i>	91
6.3.3	<i>Loss of Fauna</i>	91
6.3.4	<i>Soil Erosion/Acidification</i>	91
6.3.5	<i>Decreased Water Quality</i>	91
6.3.6	<i>Downstream Impacts of Dams, Dykes and Weirs</i>	92
6.3.7	<i>Borrow Pits and Quarry Sites</i>	92
6.3.8	<i>Impacts on Ecosystems</i>	93
6.3.9	<i>Greenhouse Gas Emission</i>	93
6.3.10	<i>Decreased Air Quality</i>	93
6.3.11	<i>Changes in downstream morphology of the riverbed and banks</i>	93
6.3.12	<i>Dam safety related impacts and Flooding</i>	94

6.4	Social Impacts	94
6.4.1	<i>Diseases Spread-Public Health</i>	94
6.4.2	<i>Incessant Traffic including accidents</i>	94
6.4.3	<i>Loss of Land</i>	94
6.4.4	<i>Impact on social fabric and community relations</i>	95
6.4.5	<i>Resource Use Conflicts</i>	95
6.4.6	<i>Gender Issues and Impacts</i>	95
6.4.7	<i>Impacts on Vulnerable and Marginalised Groups</i>	95
6.4.8	<i>Noise and Vibration Impacts</i>	96
6.4.9	<i>Health and Safety of Construction Workers</i>	96
6.4.10	<i>Solid and Effluent Waste Hazards Generation and Pollution</i>	96
6.4.11	<i>Increased crime and in-migration</i>	97
6.4.12	<i>Visual Intrusion:</i>	97
6.4.13	<i>Food Security</i>	97
6.4.14	<i>Employment Issues</i>	97
6.4.15	<i>Risk of drowning</i>	97
6.5	POTENTIAL CUMULATIVE IMPACTS	97
6.6	Environmental & Social Management Process	100
6.6.1	<i>Mitigation considerations and options</i>	100
6.6.2	<i>Recommended mitigation measures</i>	100
6.7	Monitoring Plans and Indicators	104
6.7.1	<i>Monitoring of Environmental and Social Indicators</i>	104
6.8	Issues Related to Resettlement, Pest Management, Physical Cultural Resources, Vulnerable and Marginalised Groups Plan and Dam Safety	118
6.8.1	<i>Resettlement Action Plan</i>	118
6.8.2	<i>Integrated Pest Management Plan</i>	118
6.8.3	<i>Physical Cultural Resources Management</i>	118
6.8.4	<i>Protected Areas, Natural Habitats and Forests</i>	118
6.8.5	<i>Dam Safety</i>	119
6.8.6	<i>Vulnerability and Marginalised People Plan</i>	119
6.9	Monitoring Roles and Responsibilities	120
6.9.1	<i>WSCRCP Executing Partner Institutions</i>	120
6.9.2	<i>National Environment Management Authority (NEMA)</i>	120
6.9.3	<i>WSCRCP/PMU -Environmental and Social Specialist</i>	120
6.9.4	<i>Others (Water Users Associations and Civil Society Organisations)</i>	120
7	PROJECT REVIEW, COORDINATION & IMPLEMENTATION ARRANGEMENTS	
	122	
7.1	Sub Project Investment Review.....	122
7.1.1	<i>Screening and investment project preparation</i>	123
7.1.2	<i>Who prepares a screening checklist?</i>	123
7.1.3	<i>Statutory content of Project Reports:</i>	127
7.1.4	<i>Scoping Report</i>	130
7.1.5	<i>ESIA Study</i>	131
7.1.6	<i>Social Impact Assessment Process</i>	131
7.1.7	<i>Public Review of the ESIA Report</i>	132
7.1.8	<i>ESIA Review Process</i>	132
7.1.9	<i>Environmental Permitting Decision (EPD)</i>	132
7.1.10	<i>Annual Environmental Audit</i>	132
7.2	Overall Project Compliance and Reporting.....	133
8	CAPACITY BUILDING, TRAINING AND TECHNICAL ASSISTANCE.....	134
8.1	Institutional Capacity for ESMF Implementation	134
8.1.1	<i>Ministry of Environment, Water and Natural Resources</i>	134
8.1.2	<i>Other Relevant Government line ministries and agencies</i>	134

8.1.3	<i>Water Users Association</i>	135
8.2	Identification of Capacity Needs	135
8.2.1	<i>Technical Capacity Enhancement</i>	135
8.2.2	<i>Training will focus on:</i>	135
8.3	ESMF Implementation Budget.....	137
9	PUBLIC CONSULTATION AND DISCLOSURE	139
9.1.1	<i>ESMF Disclosure</i>	139
9.1.2	<i>Public Consultation</i>	139
9.1.3	<i>Grievance Mechanism</i>	139
9.1.4	<i>Establishment of Grievance Redress Committee</i>	140
9.1.5	<i>Public Complaints Committee</i>	141
9.1.6	<i>Land and Environment Courts</i>	141
10	REFERENCE	143
	Annex A. Stakeholders Consulted.....	144
	Annex B. Stakeholders Issues and Concerns Summary	145
	Annex C. Format of Project Report As Required by NEMA	150
	Annex D. Format of ESIA Study Report.....	151
	Annex E. SAMPLE TERMS OF REFERENCE (TOR) FOR AN ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT FOR WATER RELATED PROJECTS	153
	Annex F: Format of an Annual Environmental Report	159

GLOSSARY OF TERMS

Cumulative impacts/effects: The total effects on the same aspect of the environment resulting from a number of activities or projects.

Developer/Proponent/Sponsor: the entity – person/ company/agency – proposing to develop/implement/install a new project/sub- project or expand an existing project under the WSCR

Direct impacts: An effect on the environment brought about directly by the WSCR

Disclosure: Information availability to all stakeholders at all stages of the development of projects.

Environment: physical, biological and social components and processes that define our surroundings.

Environmental and Social Impact Assessment (ESIA): A comprehensive analysis of the project and its effects (positive and negative) on the environment and a description of the mitigative actions that will be carried out in order to avoid or minimize these effects.

Environmental Monitoring: The process of examining a project on a regular basis to ensure that it is in compliance with an Environmental Management Plan (EMP), or the Government of Kenya (GoK) Environmental Impact Assessment (EIA) certification of approval conditions and / or environmental prescriptions.

Impact: A positive or negative effect that a project has on an aspect of the environment.

Indirect impact: A positive or negative effect that a project indirectly has on an aspect of the environment.

Involuntary resettlement: The forceful loss of land resources that requires individuals, families and / or groups to move and resettle elsewhere.

Lead Agency: The agency with primary responsibility for the protection of the environment. For instance, the lead agency for environment matters in Kenya is the National Environment Management Authority (NEMA).

Mitigation measures: The actions identified in an EIA to negate or minimize the negative environmental impact that a project may have on the environment.

Project and sub-project: a set of planned activities designed to achieve specific objectives within a given area and time frame.

Project Brief: The initial submitted document to NEMA to initiate the process that will lead to the issuance of the EIA certificate of approval.

Scoping: The initial stage in an environmental assessment that determines the likely major environmental parameters that will be affected and the aspects of the project that will bring upon these effects

Screening: An initial step when a project is being considered for environmental assessment. The screening is the determination of the level of assessment that will be conducted. In the case of GoK, screening will place project into one of three environmental categories (I, II or III).

Significant effect: An important impact on an aspect of the environment

Potential environmental and social impacts are defined as follows:-

Positive Impact: A change which improves the quality of the environment (for example by increasing species diversity; or improving the reproductive capacity of an ecosystem; or removing nuisances; or improving amenities)

Neutral Impact: A change which does not affect the quality of the environment

Negative Impact: A change which reduces the quality of the environment (for example, lessening species diversity or diminishing the reproductive capacity of an ecosystem, or damaging health or property or by causing nuisance). The potential adverse impacts of the project fall under two broad categories of bio-physical (natural) and socio-economic environments

Stakeholder: Any person or group that has an interest in the project, and the environmental effects that the project may bring about

ACRONYMS & ABBREVIATIONS

AMSL	Above Mean Sea Level
APL	Adaptable Program Loan
ASAL	Arid or Semi-Arid Lands
AWSB	Athi Water Services Board
CBA	Cost Benefit Analysis
CDA	Coast Development Authority
CDD	Community Driven Development
CoK	Constitution of Kenya
CPS	Country Partnership Strategy
CSO	Civil Society Organizations
CAADP	Comprehensive Africa Agriculture Development Program
CWSB	Coast Water Services Board
DCS	Data Collection System
DEM	Digital Elevation Model
DOHS	Directorate of Occupational Health and Safety
DSS	Decision Support System
EAs	Environmental Assessments
EHS	Environmental, Health and Safety
EIA	Environmental Impact Assessment
EIRR	Economic Internal Rate of Return
EMCA	Environmental Management and Coordination Act
EMP	Environmental Management Plan
ERP	Emergency Response Plan
ESIA	Environmental and Social Impact Assessment
ESMF	Environment and Social Management Framework
ESMP	Environmental and Social Management Plan
FM	Financial Management
FS	Feasibility Study
GDP	Gross Domestic Product
GIS	Geographic Information System
GIZ	German Agency for International
GOK	Government of Kenya
Ha	Hectares
HIV/AIDS	Human Immuno Deficiency Syndrome
IBRD	International Bank for Reconstruction and Development
ICT	Information and Communication Technologies
IE	Impact Evaluation
IF	Investment Framework
IMOC	Inter-Ministerial Oversight Committee
IPMP	Integrated Pest Management Plan
ISC	Implementation Support Consultant
ISP	Implementation Support Plan
KFS	Kenya Forest Service

KfW Wiederaufbau)	German Reconstruction Credit Institute (Kreditanstalt für
KIHBS	Kenya Integrated Household Budget Survey
KMD	Kenya Metropolitan Department
Ksh	Kenyan Shilling
KWS	Kenya Wildlife Service
KWSIP	Kenya Water Sector Investment Program
LIRSSU	Legal and Institutional Reforms Support Sub-Unit
M&E	Monitoring and Evaluation
MCM	Million Cubic Meters
MDGs	Millennium Development Goals
MEMR	Ministry of Environment and Mineral Resources
MOF	Ministry of Finance
MoFW	Ministry of Forestry and Wildlife
MORDA	Ministry of Regional Development Authorities
MEWNR	Ministry of Environment, Water and Natural Resources
MPND	Ministry of Planning and National Development
MSDS	Materials Safety Data Sheets
MW	Megawatt
NEMA	National Environment Management Authority
NET	National Environmental Tribunal
NGO	Non-Governmental Organization
NIB	National Irrigation Board
NMK	National Museums of Kenya
NRM	Natural Resources Management Project
O&M	Operations and Maintenance
OP/BP	Operational Policy/Bank Policy
OSHA	Occupational Safety and Health Act
PAD	Project Appraisal Document
PCC	Public Complaints Committee
PCR	Physical and Cultural Resources Plan,
PDO	Project Development Objective
PFS	Pre-feasibility Study
PIC	Public Information Center
PMP	Pesticide Management Plan
PMU	Project Management Unit
PPA	Project Preparation Advance
PPE	Personal Protective Equipment
PS	Permanent Secretary
RAP	Resettlement Action Plan
RBM	River Basin Management
RPF	Resettlement Policy Framework
SEA	Strategic Environmental Assessment
SERC	Standards and Enforcement Review Committee
SSIP	Strategic Sector Investment Plan
TA	Technical Assistance

TAC	Technical Advisory Committee
TOR	Terms of Reference
TTL	Task Team Leader
UNEP	United Nations Environment Programme
UNFCCC	United Nations Framework Convention on Climate Change
US\$	United States Dollars
VMGF	Vulnerable and Marginalized Groups Framework
VMGP	Vulnerable and Marginalized Groups Plan
VOC	Volatile Organic Compounds
WASREB	Water Services Regulatory Board
WaSSIP	Water and Sanitation Service Improvement Project
WB	World Bank
WIS	Water Information System
WRMA	Water Resources Management Authority
WRUA	Water Resources Users Association
WSB	Water Services Board
WSCR	Water Security and Climate Resilience Program
WSCR-1	First Project in the WSCR
WSCR-2	Second Project in the WSCR
WSP	Water Services Provider
WSTF	Water Services Trust Fund

EXECUTIVE SUMMARY

Government of Kenya (GoK) has requested the World Bank's support to prioritize, prepare, and finance water resources development opportunities in the country. The Kenya Water Security and Climate Resilience Program (WSCRCP) – which was agreed between the World Bank and GoK in the Country Partnership Strategy (CPS) 2010-2013 responds to this request.

Kenya has limited freshwater endowments and is projected to face rapid increases in water demand, driven by growth and urbanization. The country faces the additional challenge of high inter-annual and intra-annual rainfall variability that results in frequent and severe droughts and floods and could be exacerbated under a changing climate. Kenya has yet to adequately manage its 'difficult' hydrology, as evidenced in decades-long underinvestment in water storage that has not kept pace with growing needs or reigned in water's most destructive forces. GoK is planning a large scale water investment program to address these challenges, as well as new reforms to align the sector to the 2010 Constitution of Kenya.

Brief Program Description

Transforming Kenya's water sector to achieve water security and climate resilience for economic growth and development requires a dedicated, long-term commitment, but also a practical approach that addresses the needs in a realistic manner and at several stages where critical limitations have been identified. Further, the enormous challenges related to reversing the massive water sector investment gap and transitioning through a potentially complex reform process require a comprehensive, multi-pronged approach that addresses key infrastructure, institutional and information/analytical limitations in order to support Kenya's growth and development agenda.

The design of the program reflects these needs by financing critical investments and supporting the progressive enhancement of the water investment program, while at the same time building an enabling legal and institutional foundation for the water sector.

The objective of the program is to support the institutionalization of processes and water-related investments to strengthen climate-resilient water resources development and management in Kenya.

Currently, WSCRCP has two projects, the Kenya Water Security and Climate Resilience Project (WSCRCP-1) (P117635) and the Coastal Region Water Security and Climate Resilience Project (WSCRCP-2) (P145559). Additional Financing is being considered for WSCRCP-1 (P151660). This ESMF applies to those projects, as well as any future projects in the WSCR Program.

WSCRCP-1 has three components: (i) Investments in water resources development; (ii) water sector reforms planning and management; and (iii) Support to Project Implementation. Eligible investment projects must fall in at least in at least one of the below categories:

- Infrastructure for bulk water supply – single or multipurpose; surface water or groundwater development;
- Water services/productive uses – irrigation, water supply, or hydropower;
- Infrastructure for flood management or drought mitigation including upstream activities to ensure the sustainability of investments (e.g., catchment management for selected sites, community outreach, etc.)

An Investment Framework will be developed and will be based upon current state of the art engineering, economic, financial, social, environmental and institutional standards, most of which the World Bank applies in its operations. Investments would be considered within a catchment-based approach and may be accompanied by site-specific measures to increase resilience to natural hazards and allow for adequate disaster preparedness.

The WSCR-1 is a “framework operation” that will establish eligibility criteria and preparation guidelines that must be met in order for sub-projects/investments to be funded under the project. The framework is intended to set the ‘rules of the game’ by establishing a rigorous evidence-based investment selection and preparation process, including specifying the technical, economic, financial, environmental, social, institutional, etc. requirements for sub-project funding.

Investment in Water Resources Development

This WSCR-1 Investment component is supporting climate resilience and water security for economic growth and development by financing water resources development investments/sub-projects that are prepared in line with an Investment Framework. The Investment Framework establishes the ‘rules of the game’ by making transparent the decision-making process on sub-project selection and ensuring that selected sub-projects are well-prepared, amongst the most effective for realizing the objectives, and implemented in a sustainable manner.

The requirements of the Investment Framework must be met in order for a proposed sub-project to receive project financing. The advantage of the framework approach is that it provides GoK and the World Bank the opportunity to invest early in priority schemes provided that they are well-prepared, while establishing guidelines and principles for selecting and preparing subsequent investments.

This component will involve civil works in the development of the infrastructure and thus trigger the environmental assessment policy (OP.4.01). The potential adverse impacts will range from small scale and site specific to larger infrastructure investments associated with Environmental **Category A, B or C** projects of the World Bank.

Objective of ESMF

An Environmental and Social Management Framework (ESMF) remains the key instrument to ensure initial project safeguards at this stage principally because the exact locations, scope, designs and nature of sub project investments remains unknown.

This ESMF is aimed at ensuring that implementing institutions in this project use it in order to ensure that the Bank's environmental safeguard policies as outlined in Operational Policy OP 4.01 (Environmental Assessment) are adequately complied with.

This ESMF is expected to ensure that environmental and social management is integrated into the development and operation of investments to be financed under the WSCR to ensure effective mitigation of potentially adverse impacts while enhancing accruing benefits.

The ESMF has been prepared in line with the relevant World Bank (WB) safeguard policies on social and environmental management and further taken into account the appropriate Government of Kenya (GOK) policies, legal and institutional framework related to environmental and social assessment.

The ESMF seeks to establish a process of environmental and social screening which will permit the institutions in charge of the implementation of the projects to identify, assess and mitigate the environmental and social impacts of sub project investments. The ESMF also determines the institutional measures to be taken during the program implementation, including capacity building activities.

The purpose of the ESMF is:

- (i) *To provide as much information as possible about environmental and social impacts (including possible land acquisition and resettlement) at the project's current state of preparation;*
- (ii) *To inform project planning and design process by comparing potential impacts of alternative locations, configurations, and construction techniques that are under consideration; and*
- (iii) *To describe procedures for subsequent assessment of impacts and development of appropriate impact management instruments when the details of the sub project investments become available.*

The process of preparing this ESMF entailed detailed desk top literature review coupled with broad strategic consultation and engagement of appropriate stakeholders.

Policy, Legal and Institutional Issues

The following legal instruments among others were reviewed in view of the fact that they provide guidance and regulations when implementing water related programs or projects. These are principally the GoK legislations that apply to this project and a comparative analysis has been made between some certain relevant regulations of the GoK and the bank safeguards.

- *Environmental Management and Coordination Act (1999)*
- *Water Act*
- *Energy Act*
- *Land Acquisition Act*
- *Occupational Health and Safety Act*
- *Public Health Act*
- *Wildlife Act*

- *Forest Act*

GOK has through the Ministry of Environment, Water and Natural Resources (MEWNR) prepared this ESMF as the instrument which all the WSCRП investments environmental and social impacts will be identified, assessed, evaluated and appropriate mitigation, management and monitoring measures, designed and incorporated within the proposed investment itself.

There are 3 other safeguards instruments that will compliment this ESMF and they are: Resettlement Policy Framework (RPF) already prepared and provides standards and procedures for compensation for any land acquisition, assets, or restriction of access to resources that this project and associated investment may require, in accordance with World Bank OP 4.12 – Involuntary Resettlement. The other safeguards instruments are the Vulnerable and Marginalised Groups Framework (VMGF) in accordance with World Bank OP 4.10 and the Integrated Pest Management Framework (IPMF).

Environmental and Social Requirements

In order to reduce, minimise and mitigate adverse impacts and undue harm of its development projects to the environment, all bank-financed projects are guided by environmental and social policies and procedures commonly referred to as safeguards instruments. A number of banks' policies¹ have been triggered as a result of this project and they include:

1. OP 4.01 (Environmental Assessment),
2. OP 4.12 (Involuntary Resettlement)
3. OP 4. 10 (Indigenous People)
4. OP.4.04 (Natural Habitats),
5. OP.4.09 (Pesticide Management)
6. OP.4.11 (Physical Cultural Resources),
7. OP.4.36 (Forests),
8. OP.4.37 (Dam Safety)² and,
9. OP.7.50 (Projects on International Waterways)

All safeguards policies of the World Bank require that, before a project is appraised, an Environmental and Social Impact Assessment (EIA) containing an Environmental Management Plan (ESMP), or just an EMP, and if the project requires it, a Resettlement Action Plan (RAP), and Vulnerable and Marginalised Groups Plan (VMGP), Physical and Cultural Resources Plan, Integrated Pesticide Management Plan (IPMP) be made available for public review at a place accessible to local people (e.g. at a district council office, the project site, etc.) in a form, manner, and language they can understand. The public display of the documents should be advertised in a common local or regional newspaper.

¹ The World Bank Safeguard Operational Policies (OPs) are OP4.01 – Environmental Assessment; OP4.04 – Natural Habitats; OP4.09 – Pest Management; OP4.10 Indigenous Peoples; OP4.11 – Physical Cultural Resources; OP4.12 – Involuntary Resettlement; OP4.36 – Forests; OP4.37 Safety of Dams; OP7.50 – Projects on International Waterways; and OP7.60 – Projects in Disputed Areas. See www.worldbank.org/safeguards for more information.

² At the project level, this safeguard has been triggered for WSCRП-2, but not for WSCRП-1.

All necessary safeguard documents that will be locally disclosed will also be forwarded to the Bank for disclosure at its Public Information Center (PIC) of the country, if there is one, and at the Bank's Infoshop.

Environmental and Social Impacts

Beneficial Impacts

- Investments towards climatic data management and forecasting will help in developing fairly precise climatic forecasting which will equally be of use to the farmers in timing crop regimes and production;
- Flood control and infrastructure to ensure climate change resilience remains a key benefit due to the adverse impacts caused by climate related risks and disasters;
- Investments geared towards developing capacities of the stakeholder institutions that manage the natural resources will go a long way to ensuring good environmental governance of the natural resources, hence ensuring their sustainability;
- Construction and rehabilitation of water facilities will have significant positive impacts on the health of the communities and populations in the targeted project areas. This will go a long way towards attaining the Millennium Development Goals (MDGs);
- The water supply projects will make safe water fully available to the populations as well as their assets emanating from projects in livestock watering points and associated animal tracks (reducing or eliminating prevailing agriculturalist/pastoralist conflicts) and small scale agricultural activities and essentially improve their quality of life;
- Investments in river banks stabilization will protect the rivers from siltation and sedimentation from run-off;
- The plans to have in place irrigation technologies will ensure efficient use of water resources which is consistent with environmental sustainability principles;
- The activities of the program will help to identify and to implement the necessary measures for the protection of biodiversity areas thus conserving the wealth of the species at the local and national level.
- Also, these investments will contribute to combating desertification; enhancing reforestation, soil restoration and the implementation of national conservation activities.
- The water catchment basins will be better used for the socio-economic benefits of the communities whilst at the same time establishing sound management practices

to conserve water resources as a result of the watershed protection and landscape management interventions.

The WSCRП proposed sub project investments may have significant negative impacts on the environment from a project specific perspective and cumulatively. **Potential Adverse Impacts**

This ESMF has been designed to anticipate and address potential impacts at the planning stage of existing and new investments and related activities. **Table 1** and **2** below summarises the potential negative impacts that the investments may have on the environment and proposed mitigation measures that should be considered during preparation of sub project ESIA's.

Environmental Impacts

Loss of vegetation

There will be vegetation loss during the construction phase (for project investments) either to pave way for access roads, actual project construction among others. The vegetation will be cleared so that the area where the construction work is to take place is clear for the construction work to be performed. The construction works will involve direct land take of productive pasture land and agricultural lands, bush clearing, removal of top soil, excavation and mass haulage. These activities will expose the land to elements of erosion such as wind and water and thus will trigger the process of land degradation.

Change in Hydrology

Abstraction of water for irrigation, bulk water storage, irrigation, hydropower, multipurpose will have impact of the hydrological flow of the riverine system. The impact will affect the general hydrological flows including current existence of water bodies.

Loss of Fauna

Potential investments may generally fragment ecosystems, isolating species population and cutting off migrations and other movement. For example dams will block the upstream and downstream passage of migrating aquatic animals. This will isolate them from vital spawning and feeding areas. Many fish and invertebrates will decline due to depletion of riverbed gravels. Destruction of wild fauna habitat due to construction (on site and along road rehabilitation profile/borrow pit sites).

Soil Erosion/Acidification

Soil erosion could occur during the construction phase when loose soil is swept by waters and during the operational phase especially when irrigation investments are involved. This will be as a result of the intensive activities that will be going on in the construction areas especially land clearing. The heavy equipment and machines that shall be used in the construction process will interfere with the soil structure making it loose hence liable to erosion. Irrigation activities will also cause water logging effects.

Decreased Water Quality

Increase in suspended particles due to construction works; risk of human contamination from construction camps; and competition for water will affect the water quality especially where investment projects are close to natural water bodies. Suspended particles including soil from the neighbouring catchment area will contribute to this. Water quality could deteriorate significantly due to reduced water recharge and balance leading to stagnation contributed by upstream use of fertilizers and pesticides as well especially when investments involved irrigation agriculture. Agrochemical pollution could become a major problem with intensification of monoculture.

Downstream Impacts of Dams, Weirs and Dykes

Changes to the low flow regime may have significant negative impacts on downstream users, whether they abstract water (irrigation schemes, drinking supplies) or use the river for transportation or hydropower. Minimum demands from both existing and potential future users need to be clearly identified and assessed in relation to current and future low flows. The quality of low flows is also important. Return flows are likely to have significant quantities of pollutants. Low flows need to be high enough to ensure sufficient dilution of pollutants discharged from irrigation schemes and other sources such as industry and urban areas. A reduction in the natural river flow together with a discharge of lower quality drainage water can have severe negative impacts on downstream users, including irrigation schemes.

Habitats both within and alongside rivers are particularly rich, often supporting a high diversity of species. Large changes to low flows ($\pm 20\%$) will alter micro-habitats of which wetlands are a special case. It is particularly important to identify any endangered species and determine the impact of any changes on their survival. Such species are often endangered because of their restrictive ecological requirements.

As a result, in the cumulative impact analysis which would be done for each investment the impact of a given project on those people should be considered. The most important mitigation measures are the release of good quality Reserve Flows capable of maintaining important environmental services, and satisfying downstream water requirements. In addition, the measures taken in the catchment areas in order to improve the longevity as well as the operation of the multipurpose dams and irrigation schemes could affect the livelihoods means of the people living upstream.

Borrow Pits and Quarry Sites

Borrow pits and quarry are sites where stone, sand, gravel, till, clay, or other granular soils are extracted for construction of the various investments within WSCR. The term 'pit' is used when granular material is extracted. The term 'quarry' is used where consolidated rock is removed. Environmental impacts of pit and quarry development can include the loss, reduction or disturbance to wildlife and habitat, erosion, dust, soil/groundwater contamination, damage to historic resources, waste disposal, noise, and aesthetics.

Impacts on Ecosystems

Potential environmental impacts will result from the creation of the diversion sites and structures themselves, and from operational management of diversion sites and the impacts on downstream riverine ecosystems, including maintenance of in stream and riparian habitats. Downstream impacts on riverine ecosystems are considered above under downstream environmental flows and these are considered to be the primary environmental impacts associated with the development of these water supply abstraction sites. Off-take of water for irrigation will result in reduced stream flows especially during the dry season.

Greenhouse Gas Emission

Greenhouse gas (methane) will be emitted from the irrigation schemes with rice paddies through methanogenesis process from the dam reservoirs and paddies. The cumulative effects of greenhouse gas effect on the climate results in global warming.

Decreased Air Quality

Airborne dust will be caused by excavation, vehicle movement hence engine combustion and materials handling, particularly downwind from the construction sites during the construction phase of the identified investments. Uncovered stock piles and asphalt mixing plant operations are another source of dust. Air pollution will be further caused by emissions from vehicles and construction machinery. There will be decreased air quality due to dust, suspended particles, hydrocarbon vapours, oxides of nitrogen and sulphur (NO_x and SO_x) and Volatile Organic Compounds (VOC) among other emissions.

Changes in downstream morphology of the riverbed and banks

The impact of the proposed water projects like irrigation schemes, bulk water supply dams on downstream habitats will be through changes in the sediments load of the rivers. All rivers carry some sediment as they erode their watershed. When the river is held behind a dam in the reservoir for a period of time, most of the sediment is trapped in the reservoir and settle to the bottom. Clear water below the dam will recapture its sediments load by eroding the downstream bed and banks. Eventually all the erodible material on the riverbed below the dam will be eroded away, leaving a rocky streambed, and a poorer habitat for aquatic fauna. However, this is a phenomenon that will be experienced up until the river reaches new sediment load equilibrium.

Proposed investments may affect and change downstream water quality and will manifest in change in river temperature, nutrient load, and turbidity; dissolve gases, concentration of heavy metals and minerals. For example for dam and irrigation projects, when river water is held in a reservoir for a period of time, the quality of the water is affected. When a reservoir is first firmed, submerged vegetation and soil decomposes. As it does so it will deplete oxygen in the reservoir water. Deoxygenated water can be lethal to both plant and animal lives.

Dam safety related impacts and Flooding

Poor dam design and maintenance may lead to dam breakage and therefore flooding that may lead to deaths and destruction of property. In case of dam break, it can have far reaching impacts on the downstream communities. Emergency plans and procedures will have to be developed to handle such an incidence. Although its occurrence may have far reaching consequences, the impact is mitigable and the probability of its occurrence will be minimized through dam safety plans, inspection procedures and disaster management procedures and thus the magnitude of this impact is expected to be medium negative.

Social Impacts

Diseases Spread-Public Health

Improve access to water and irrigation will have positive benefits on the lives of the communities such improved in yield and better access to drinking water. However, it also could have some negative impacts. Dams and diversion weirs could impact the health situation of those living close to them due to increase in the number of mosquitoes as one example.

There is a potential risk that the construction process for most of the investment projects could increase HIV/AIDS prevalence in the project areas especially through interactions of the locals with the labour forces. Increase in risk of sexually transmitted diseases, such as HIV/AIDS etc. due to influx of migrant workers; solid waste and effluent discharge from construction camps; risk of increase in vectors of *schistosomiasis*, *river blindness*, *Lymphatic filariasis (elephantiasis)* and malaria due to stagnant water associated with construction works/borrow pits etc. (targeting bulk water supply schemes, flood management, dams or irrigation schemes).

Incessant Traffic including accidents

Traffic congestion from construction and operation phases of the investments and which could potentially cause disruption, health and safety impacts, as well as economic impacts. The use of heavy moving construction vehicles and machineries in project sites is generally known to cause traffic reducing movement and flow of vehicles. It is also further envisaged that with the improvement of the transport sector (i.e. construction, expansion or of new roads, highways and bridges) the traffic volumes and speeds will increase, and composition will change. This is likely to cause increased frequency and severity of accidents.

Loss of Land

There will be loss of farmland, grazing land, business and structures among others by the local communities owning the land. The construction of irrigation schemes, dams, bulk water supply systems, among others. The existing land use of the project area will be affected by the construction of access roads, construction camps, opening up of material sites and quarry sites among others. These will scar the land, cause vegetation loss leading to soil erosion. The construction activities is almost all the sectors will involve a relatively high degree of land take bearing in mind that most of the projects are linear in nature thus requiring adequate land and space.

There are populations who may lose their land, assets and means of livelihood due to infrastructures and programs needed for the investment under WSCRП especially when investments such as irrigation, multipurpose dams, surface and underground water development, and catchment management, among others are considered.

Impact on social fabric and community relations

Some of the infrastructure as well as loss of land can cause communities to be separated and some of the social and economic relations and reliance disturbed. For example irrigation canals or dams are likely to segment the communities and in certain instances deny them access to land and to one another.

Resource Use Conflicts

Increasing irrigation schemes and dam construction for example under WSCRП investments and as a result the increase in the amount of land under irrigation could cause conflict between those with different water needs such as agriculturists and pastoralist, fishery, household use, to name some.

Women having different needs with respect to water for household use as well as household plots, which are mainly tended by women, could be negatively impacted if measures are not considered for household needs when expanding irrigation schemes and specific needs of women with respect to water resources. The vulnerable and marginalised groups could lose access to some of their sacred sites and ancestral lands. To address the issues related to the latter group, the Vulnerable and Marginalized Groups Framework is prepared under the WSCRП.

Flood control investments could limit the access of those who use the flood plain for cultivation. The investments that are forming users' associations should make sure they are inclusive of all users and groups, including women, pastoralists, agriculturists, businesses in the area, fishermen, among others. The project can cause some changes in social processes such as demographic change and resource-use conflicts.

Gender Issues and Impacts

As noted above, women have different needs and use of water including for domestic household use, small households plots for agriculture, for animals among other things. Construction of irrigation schemes as well as dams, bulk water storage facilities can limit women access to water for such needs. As a result, different needs of women with respect to land and water use should be taken into consideration when designing the investments under WSCRП to avoid their potential discrimination from access to land and water as a result of the WSCRП.

Impacts on Vulnerable and Marginalised Groups

Changing land patterns and workloads resulting from the introduction or formalizing of irrigation are likely to affect men and women, ethnic groups and social classes unequally. Groups that use "common" land to make their living or fulfil their household duties, e.g. for charcoal making, hunting, grazing, collecting fuel wood, growing vegetables etc. may be disadvantaged if that same land is taken over for irrigated agriculture or for building

irrigation infrastructure. Historically, it has been men from the more settled and powerful groups that have had greatest access to the benefits and increased income from irrigated agriculture. Women, migrant groups and poorer social classes have often lost access to resources and gained increased workloads.

Irrigation agriculture related projects may ignore the role of women in agriculture and existing producer groups as well as water users associations. Similarly inadequate capacity, access to services (extension and others) and decision making especially for women may tilt the scale and cause further disparity among women who may be affected negatively by the investments. The formation of Irrigation Water Users Associations or producers associations must be compelled to include gender inclusivity and this has been embraced by the Water Act for example and will be considered during the investment stages of the sub projects in regard to institutional and organisation development framework.

Vulnerable groups include special marginalised groups, orphans, and child headed households, the sick, elderly and female headed households among others and who may be adversely affected by the proposed investments especially in the event that their status as vulnerable or marginalised groups is not considered in the preparation of the specific investments.

Noise and Vibration Impacts

Construction activities could result in significant noise impacts so as to impact on general well-being, health and functioning. Large scale infrastructure developments involve the use of heavy equipment (graders, drilling equipment, trucks, blasting equipment, tractors, and excavators) for among others rock blasting, excavation, asphalt mixing plant operations and vehicular movement that emit incessant noise usually harmful to the environment. Introduction of new sources of noise is an issue in areas where ambient noise levels have been low.

Health and Safety of Construction Workers

Occupation health and safety of the workers during the construction phase (and in certain cases operation phase) is likely to be a concern due to the accidents that normally occur in construction sites that could cause loss of life, limbs among others.

Solid and Effluent Waste Hazards Generation and Pollution

Solid waste issue is a potential adverse impact that will be as a result of abandonment of litter/construction materials on site, use of plastic container/bags by road users and the construction crew and use of polythene sheet for curing by the contractor. Construction camps may be a further source of both solid and liquid wastes.

Increased crime and in-migration

The increase in the number of people in a specific project area or site especially during construction has the potential to lead to a number of negative socio-economic impacts, including increased insecurity and community conflicts, increased incidences of diseases; increased risk of accidents and occupational hazards; and immigration of construction workers and labour force management challenges.

Visual Intrusion

Unightly earthworks and borrow pits during construction may be a source of visual related impacts especially through scarring of landscapes. During operations, visual intrusion of equipment on site may be seen as a negative impact at the local level.

Food Security

There is a possibility the increase in investments for example irrigation system may decrease the food security of the people living in the area due to more attention to cash crops. This could specially affect the women and children who have less access to cash crops and more advance farming.

Employment Issues

The construction activities of sub project investments may require recruitment of “foreign” skilled and unskilled labour that could trigger conflict, resentment and tension by the local communities over perceived inequities in distribution of job opportunities by the local communities.

Risk of drowning

There is a risk of drowning by both children and adults in the reservoirs. Furthermore, domestic animals may also drown in the reservoir while trying to drink from it. Although this risk leads to loss of lives, it can be avoided and mitigated thus the magnitude of the impact is considered to be medium negative and can be mitigated by planting trees and other vegetation to reduce accessibility, carry out surveillance and off the dam area and sensitization of the community of emergency plans of action in case of disasters.

Table 1 and 2: Summary of Adverse Impacts and Mitigation Measures

Impacts	Description of mitigation measures
Physical Environment	
Waste disposal	<u>Solid nontoxic waste</u> Adequate waste receptacles and facilities should be provided at project sites/camp sites Training and awareness on Safe Waste Disposal in construction camps for all workers Final disposal should be at dumpsites approved by the NEMA <u>Waste oil /fuel</u> Spent or waste oil from vehicles and equipment should be collected and temporarily stored in drums or containers at site Waste oil should be disposed of by oil marketing companies or agents approved or recognized and have the capacity to undertake oil disposal
Air pollution	Proposed investments should require that construction contractors operate only well maintained engines, vehicles, trucks and equipment. A routine maintenance program for all equipment, vehicles, trucks and power generating engines should be in place. The project should ensure the use of good quality fuel and lubricants only If dust generation at the project/construction site becomes a problem, limited wetting of sites and or unloading and reloading points should be done to reduce dust raising

	<p>Construction traffic speed control measures should be enforced on unpaved roads (speed limits through communities should be ≤ 50 km/hr on unpaved roads and near or at project site should be ≤ 30 km/hr).</p> <p>Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.</p>
Noise and vibration	<p>Proposed investments should require contractors to use equipment and vehicles that are in good working order, well maintained, and that have some noise suppression equipment (e.g. mufflers, noise baffles) intact and in working order. This will be achieved by making it a component of contractual agreements with the construction contractors.</p> <p>Contractors will be required to implement best driving practices when approaching and leaving the site (speed limit of ≤ 30 km/hr) to minimize noise generation created through activities such as unnecessary acceleration and breaking squeal.</p> <p>Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.</p>
Impacts on landscape and visual receptors	<p>Landscaping of facilities after construction and restoration of disturbed areas e.g. borrow pits</p>
Impact on traffic and public safety	<p>Only road worthy vehicles and trucks should be used to avoid frequent breakdowns on the roads</p> <p>Only experienced drivers should be employed</p> <p>Contractors must provide training for drivers; Establish speed limits; Enforce safe driving and take disciplinary action against repeat offenders</p>
Water use	<p>Obtain water abstraction permits from the Water Resources Management Authority (WRMA)</p>
Water pollution	<p>No garbage/refuse, oily wastes, fuels/waste oils should be discharged into drains or onto site grounds</p> <p>Fuel storage tanks/sites should be properly secured to contain any spillage</p> <p>Maintenance and cleaning of vehicles, trucks and equipment should take place offsite especially where project sites are close to water bodies.</p> <p>Toilet facilities should be provided for construction workers to avoid indiscriminate defecation in nearby bush or local water bodies</p> <p>For project investments where pesticides are used e.g. irrigation, an Integrated Pest Management Plan (IPMP) should be prepared</p>
Soil and land degradation	<p>Minimize land clearing areas as much as possible to avoid unnecessary exposure of bare ground to the elements of the weather</p> <p>Re-vegetate cleared areas as early as possible using native plant species</p> <p>As much as possible, avoid construction work in the rainy season</p>
Impact on fauna and habitat	<p>Avoid unnecessary exposure and access to sensitive habitat areas</p> <p>For identified or suspected sensitive habitats (swamps/ wetlands), regular inspection or monitoring should be carried out in the area prior to start and during work.</p> <p>If sensitive habitats are encountered, Project activities should cease and the Project should consult KWS to determine the appropriate course of action.</p>

	<p>If the project site is discovered as a sensitive habitat area, the Project should engage the KWS to develop a suitable plan.</p>
Impacts on inland water bodies/ fauna/habitat	<p>Prohibition on hunting and consumption of bush meat by workforces</p> <p>Proposed investments should require that contractors implement a hazardous materials management plan that includes specification for proper storage and handling of fuels, oil, wastes, and other potentially hazardous materials as well as a plan for containment and clean-up of accidental spills into the aquatic environment.</p> <p>During pre-installation and installation of project facilities, spotting of sensitive aquatic mammals should form part of the project activities. Should these species be observed in the vicinity of the work area, the project should execute measures to avoid destruction or disturbance.</p> <p>Ensure provision for water flow reserves and appropriate reservoir filling schedules</p> <p>Project staff must report sightings of any injured or dead aquatic life (fishes)/ mammals immediately, regardless of whether the injury or death is caused by a Project activity. The report should include the date and location of the animal/strike, and the species identification or a description of the animal. The report should be made to the NEMA or KWS.</p> <p>The Project workforce and local communities should be educated to ensure that the importance of environmental protection and nature conservation are effectively communicated and that wider appreciation of environmental issues and construction best practice are fostered.</p>
Social Environment	
Physical displacement	<p>All affected persons to be given relocation assistance (cash or kind) by the Project to enable them move their properties to new locations, i.e. in accordance with the Resettlement Policy Framework (RPF)</p> <p>Resettlement Plans will be required. If a site is acquired, the State may relocate persons and their families as well as community facilities to be affected. The affected families should not be made to incur any cost during the relocation period. A resettlement plan should be prepared for this area with the RPF as a guide.</p>
Loss of employment and livelihoods	<p>Those whose livelihood is affected should be assisted to ensure they will not be worse off as a result of the project. This can include livelihood assistance, provision of new jobs immediately without any loss of income. The social assessments and socio-economic surveys, which will be undertaken for the preparation of individual investments/subprojects as well as the resettlement action plans, should assess these issues and provide measures in accordance with the Resettlement Policy Framework (RPF).</p> <p>Contractors should use local labor as much as possible and where available. As much as possible, all unskilled labor should be contracted or obtained from the local community.</p>
Loss of land and other assets	<p>Due process should be followed to establish the true owner of any land, be it family or communal land. Once established, the project should acquire the site by paying appropriate compensation in accordance with the resettlement policy framework (RPF), which would be the replacement cost of the assets lost.</p>
Loss of structures/properties	<p>For a project site to be used, irrespective of the land ownership, appropriate compensation should be paid for any structures/ properties which are permanent structures at the site as well as investment made for any development on the land.</p> <p>Depreciation should not be factored during valuation of these properties. The compensation process should satisfy the RPF developed for the project.</p>

	<p>Appropriate compensation should be paid for any damaged or destroyed propriety that belongs to affected persons. No depreciation during valuation of these properties.</p>
Impact on access among communities living in the project areas	<p>Measures will be considered in the projects' design to ensure that communities are not divided and if they are as a result of a project appropriate measures are taken to mitigate this impact.</p>
Impacts on recreation and public areas	<p>Appropriate notices and warning signs will be erected around working areas and public areas to warn prospective trespassers of any danger or risk</p>
Impacts on human health/ traffic safety and sanitation	<p>Trucks carrying construction materials such as sand, quarry dust, laterite etc. will have the buckets covered with tarpaulin or appropriate polythene material from or to project site</p> <p>Only road worthy vehicles/trucks should be used</p> <p>Only experienced drivers/operators should be employed</p> <p>Except for areas secured by fencing, all active construction areas will be marked with high-visibility tape to reduce the risk accidents involving pedestrians and vehicles.</p> <p>All open trenches and excavated areas will be backfilled as soon as possible after construction has been completed. Access to open trenches and excavated areas will be secured to prevent pedestrians or vehicles from falling in.</p> <p>Adequate sanitary facilities will be available for workers and open range defecation will not be countenanced.</p> <p>Construction workers will be provided with and educated to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, earplugs, gloves etc.</p> <p>Enforce use of PPEs at all times for all staff and labourers and ensure supervision of the same to minimise accidents</p> <p>Construction workers should be educated to adhere to basic rules with regard to protection of public health, including most importantly hygiene and disease (HIV/AIDS) prevention.</p>
Impacts on cultural heritage / archaeological interest / existing ecologically sensitive areas	<p>The pre-construction surveys should identify cultural heritage resources and existing ecologically sensitive areas that the project should avoid and by-pass these resources.</p> <p>The Project should implement a chance find procedure and reporting system to be used by contractors in the event that a cultural heritage feature or ecologically sensitive item/issue is encountered.</p>
Impacts on human health and public safety	<p>The Project will require all contractors to implement an Environmental, Health and Safety (EHS) plan which will outline procedures for avoiding health and safety incidents and for emergency medical treatment. This will be achieved by making it a component of contractual agreement.</p> <p>Contractors will be required to wear suitable Personal Protective Equipment (PPE) including hard hats, high-visibility vests, safety boots and gloves and life vests as appropriate in accordance with the EHS plan.</p> <p>Enforce use of PPEs at all times for all staff and labourers and ensure supervision of the same to minimise accidents</p> <p>All construction and other workers will be sufficiently trained in the safe methods pertaining to their area of work to avoid injuries.</p>

Labor related issues	The project to prepare redundancy plans and packages to be discussed with affected workers which will include re- training and re- tooling of affected workers and aim to avoid labor strife.
Waste pollution from construction camps	Prepare Waste Disposal Plan for every construction site Install waste disposal receptacles and signs in strategic places within the construction camps Provide training and awareness on need to avoid littering Ensure the construction camps have toilets and connected to the sewer system
Impact on gender access to water for household use and household plots as well as impact on pastoralists and fisheries.	The project will take into consideration the different needs for water and types of access which will be affected for each of these groups and provide relevant mitigation measures which will be decided with those affected. Some mitigation measures could include water points for household use and livestock; livelihood assistance to those whose whole or partial livelihood will be affected as a result of some of the possible investments such as irrigation schemes and dams. Specific impact and relevant measures will be covered by project specific social assessment.
Impacts on vulnerable and marginalized groups (orphans, child and women headed households, the sick, elderly etc.)	The project will ensure that all the vulnerable and marginalised groups are identified and profiled and through the Vulnerable and Marginalised Groups Framework (VMGF) specific plans are designed for each investment to consider the wellbeing of the vulnerable and marginalised groups identified.
HIV/AIDS Spread and other related public health diseases – Water borne diseases etc.	Design HIV/AIDS awareness, sensitisation and prevention program for each project that extends to the communities as a whole; Design programs for reducing the spread of water borne diseases like Malaria, Bilharzia etc. in collaboration with the Ministry of Health
Downstream Impacts of dams, dykes and weirs and other water infrastructure e.g. irrigation investments, bulk water supply,	Maintain environmental flow reserves for the river, Do into retain water in reservoir during drought, ensure that water retention in dam is controlled to ensure that adequate reserve is left to flow downstream for users
Dam safety impacts	Ensure dam is designed by specialists; Institute a dam safety panel and develop a dam safety plan for all dams
Construction camp impacts	
Labour and employment related impacts	Ensure that the local communities are given priority in relation to employment and provided with training (skilled) to provide future labour in the project e.g. operation and maintenance

Safeguard Screening Procedures

The WSCRП has been rated Category A under the World Bank Operational Policy on Environmental Assessment (OP4.01) however, the sub project investments within the overall WSCRП may necessarily not be rated Category A and may in fact vary between Category B and even C for example, **component 2** of WSCRП-1 which is basically investment in Water Sector Reforms and Planning and Management Instruments. This ESMF has been designed to include tools that will be used to screen each proposed sub project investment prior to implementation and contains recommendation on the mitigation measures that need to be adhered to in order to reduce the adverse impacts.

Through the screening process a determination on the safeguards policies triggered by a particular proposed investment will be made and the mitigation measures to put in place outlined. Further the screening and review process will also ensure that sub project investments are adequately categorized as **A, B or C** and in effect those that are categorized as **A** be subjected to a full scale ESIA, those categorized as B subjected to stand alone ESMP or an environmental analysis more limited than a full ESIA and those categorized as C subjected to no environmental evaluation/study.

If identified as a requirement of the sub project through the screening process, a Resettlement Action Plan (RAP), Integrated Pest Management Plan (IPMP), a Vulnerable and Marginalised Groups Plan (VMGP) and/or a Physical Cultural Resources Management Plan, Dam Safety measures or a combination of these, is prepared alongside or as an integrated part of the ESMP or ESIA.

Procedure for screening and development of ESIA's

Using this ESMF which is in essence a guide, the development of sub project investment specific Environmental and Social Impact Assessment (ESIAs) will be required for each proposed sub project investment once the nature, scope and location among others of the investments are known in order to ensure compliance with the World Bank safeguards policies. All sub project investments will be screened using the screening forms (*See section 7.1*) and a determination will be made using the forms whether an ESIA report is required or otherwise by the Bank. The screening for all sub project investments will be undertaken by the WSCR/PMU based environmental safeguards specialist.

In order to ensure compliance with the Government of Kenya (GoK) environmental regulatory requirements during the feasibility study stage of each investment, project reports will be prepared for each sub project investment by the executing agency with the support of the WSCR/PMU and submitted to NEMA for determination as to whether an ESIA is required or not. If National Environment Management Authority (NEMA) makes a determination that an ESIA is required based on the project report submitted, then NEMA will assist in the development of Terms of References (ToRs) for follow-up ESIA and Resettlement Action Plan (RAP) which will have to be prepared and submitted to NEMA and World Bank for approval before construction works commence.

All the ESIA's or ESMP's will be reviewed and approved by WSCR/PMU and submitted to NEMA and the World Bank for further review and approval.

Reporting and Performance Review Requirements

The MEWNR through the WSCR/Project Management Unit (PMU) that will be set up will prepare project specific quarterly environmental and social progress reports for submission to the Bank. The executing agencies and other related ministries e.g. Water Services Board (WSBs) National Irrigation Board (NIB), among others will prepare project (through consultants) specific ESIA and Resettlement Action Plans (RAPs), Vulnerable and Marginalized Groups Plans (VMGPs) Integrated Pesticide Management Plans (IPMPs), Physical Cultural Resources Management Plan for identified investments during the feasibility study phase of the project following detailed screening. Environmental and social safeguards technical assistance to the WSCR executing agencies will be provided by the WSCR/PMU's Social and Environmental specialists who will be recruited for this purpose. These reports will be submitted to the World Bank's implementation support and review missions.

Capacity Building and Training

Capacity development and strengthening remains a crucial component in this ESMF and will be integrated all through the project implementation phase. Capacity building will be in the form of training seminars/ workshops and short courses for project implementing partner staff from the implementing agencies to be able to successfully implement environmental and social aspects of the WSCR. The proposed training modules will cover among others:

- a) *World Bank safeguards policies and NEMA Environmental regulations, specifically covering including the ESMF/ RPF/IPPF;*
- b) *Subproject Screening Checklist;*
- c) *Environmental Monitoring*
- d) *Development of Terms of Reference for ESIA's;*
- e) *Environmental and Social Clauses in Contractors' contract and bidding documents.*

The estimated cost of capacity building and other support to implement the ESMF is given as **US \$, 1,000,000** and the breakdown is summarized as follows which excludes the cost of preparing project specific ESIA's:

1. Training workshops/ seminars
2. Public awareness creation/ communication plans
3. Logistic support to the NEMA
4. Preparation of ESIA for the sub project investments
5. Monitoring and evaluation exercises

Public Consultations

This being an investment framework, the level of stakeholder consultation has been focussed to only the already known WSCR executing partners and specifically those that could be identified at this early stage. However, this ESMF provides for the process and techniques to be followed once the full program is designed and partners are known which will include stakeholder mapping and consultation. Annex **A** and **B** shows the institutions and stakeholders consulted thus far and the issues and responses from the consultation process.

Project Implementation

Ministry of Environment, Water and Natural Resources (MEWNR) is the principal implementing institution for this project and a senior official in the Ministry will be the overall Project Coordinator. MEWNR will also be responsible for day-to-day implementation (project management, financial management, procurement, disbursement, monitoring, including environmental and social aspects of the project etc.) for all components.

Due to the planned restructuring of key ministries, the Project will be managed by a Project Management Unit (PMU) initially housed in the Ministry of Environment, Water and Natural Resources and then, if necessary, transferred to the successor Ministry responsible for water resources management and development. Specific arrangements for administering project activities by the PMU at other levels will be established during project design.

The PMU will be a transitional entity. One of its important roles would be to develop within MEWNR and successor implementing agencies – which would typically implement most of the WSCRП investments – the required capacities for procurement, financial management, monitoring and evaluation, safeguards implementation, and sub-project and activity execution. In the interim, the PMU will undertake these roles on behalf of those agencies through the services of consulting firms (Component 1), or by procuring an appropriate implementation support consultancy that is embedded within each respective implementing agency (Component 2). At mid-term, the project will assess the extent to which these activities are adequately implemented and make needed adjustments. The executing agencies of this project will report periodically to the WSCRП/PMU/MEWNR on all issues and aspects related to this project including environmental and social safeguards.

Cost implication of this ESMF

An estimated **USD 3.3 Million** is considered the amount that will be necessary for implementing the activities in this ESMF excluding the costs related to sub project specific feasibility studies or actual ESIA's which will be handled on a case by case basis once the actual sites and locations are known. The ESMF report is organized as follows:

- *Acronyms and abbreviations*
- *Executive summary*
- *Chapter 1-Introduction Chapter and description of the proposed project*
- *Chapter 2-Study Methodology*
- *Chapter 3-Baseline information*
- *Chapter 4-Description of National and International Regulatory Framework*
- *Chapter 5-World Bank Environmental and Social Safeguards Policies*
- *Chapter 6- Determination of Potential Environmental Impacts*
- *Chapter 7- Project Coordination and Implementation Arrangements*
- *Chapter 8 - Capacity building and training requirements*
- *Chapter 9- Public Consultations and Disclosure*
- *Chapter 10 - Reference*
- *Technical annexes*

I INTRODUCTION

Kenya has limited freshwater endowments and is projected to face rapid increases in water demand, driven by growth and urbanization. The country faces the additional challenge of high inter-annual and intra-annual rainfall variability that results in frequent and severe droughts and floods and could be exacerbated under a changing climate. Kenya has yet to adequately manage its ‘difficult’ hydrology, as evidenced in decades-long underinvestment in water storage that has not kept pace with growing needs or reigned in water’s most destructive forces. Government of Kenya (GoK) is planning a large scale water investment program to address these challenges, as well as new reforms to align the sector to the 2010 Constitution of Kenya.

GoK has requested the World Bank’s support to prioritize, prepare, and finance these water resources development opportunities. The proposed Water Security and Climate Resilience Project – which was agreed between the World Bank and GoK in the Country Partnership Strategy (2010-2013) responds to this request.

The objective of the proposed Project will be to support the institutionalization of processes and water-related investments to strengthen climate-resilient water resources development and management in Kenya. The Project is expected to have three components: (i) water resources development; (ii) water resources planning and management; and (iii) support to water sector institutional reforms associated with the new Constitution.

The proposed Project is currently expected to be in the order of about US\$ 700 million and will be implemented in two to three phases over a period of approximately eight years. The budget envelope reflects the vast water investment needs in Kenya, which the project aims to support, and the precise amount will be agreed during project preparation. The longer-term and phased approach demonstrates the Bank’s commitment to the sector, while providing the necessary flexibility for activity/investment identification and implementation, given the evolving institutional and reform process over the coming years in Kenya.

The water resources development component (i) activities will involve civil works that is construction and/ or rehabilitation of infrastructure and thus trigger the environmental assessment policy (OP.4.01). The impacts here will range from small scale and site specific projects that could be rated as category C to larger infrastructure investment projects associated with Category A or B projects of the World Bank as well as trigger the Environmental Assessment Regulations of the Kenya Environmental Management and Coordination Act (EMCA 1999). The appropriate instrument at this point in time for the WSCR is an ESMF because the sub projects are still evolving with the exception of Nzoia Irrigation sub project that has already been identified as a pipeline project.

1.1 Purpose of the ESMF

This ESMF seeks to establish a process of environmental and social screening which will permit the institutions in charge of the implementation of the sub projects to identify, assess and mitigate the environmental and social impacts of sub project investments. The ESMF

also determines the institutional measures to be taken during the program implementation, including those relating to capacity building.

1.2 Rationale for the ESMF

As many specific project investments in the WSCRП have not been clearly identified at this stage, hence an ESMF provides a general impact identification framework to assist project implementers to screen the projects and institute measures to address adverse environmental and social impacts. This ESMF thus applies to all sub projects to be financed under phase 1,2 and future phases of the WSCRП. There exists a pipeline of potential sub projects, all which will have to satisfy safeguards requirements during project implementation, as the corresponding technical (hence environmental and social safeguards aspects), of these sub projects have not yet been finalised or appraised. Specific information on country- wide project locations, land requirements, bio- physical features etc. when known at a later stage will trigger the preparation of Environmental and Social Impact Assessment (ESIA) reports.

1.3 Approach for the preparation of ESMF

The ESMF has been prepared in accordance with applicable World Bank safeguard policies (OP. 4.01), which involved the following activities, among others:

- *Literature/ Data Gathering and Review;*
- *Public consultations and discussions with relevant sector institutions;*
- *Determination of potential impacts; Identification of impact mitigation measures; Preparation of an Environmental and Social Management Plan; and Preparation of sub-project guidelines.*

1.4 Program Description

1.4.1 Country and sector context/ Project Concept

Kenya has limited freshwater endowments and is projected to face rapid increases in water demand, driven by growth and urbanization. The country faces the additional challenge of high inter-annual and intra-annual rainfall variability that results in frequent and severe droughts and floods and could be exacerbated under a changing climate. Kenya has yet to adequately manage its ‘difficult’ hydrology, as evidenced in decades-long underinvestment in water storage that has not kept pace with growing needs or reigned in water’s most destructive forces. GoK is planning a large scale water investment program to address these challenges, as well as new reforms to align the sector to the 2010 Constitution of Kenya. GoK has requested the World Bank’s support to prioritize, prepare, and finance these water resources development opportunities. The proposed Kenya Water Security and Climate Resilience Project – which was agreed between the World Bank and GoK in the Country Partnership Strategy (2010-2013) responds to this request.

The nature of the WSCRП reflects the vast water investment needs in Kenya, which the project aims to support, and the precise amount will be agreed during project preparation. The longer-term and phased approach demonstrates the Bank’s commitment to the sector, while providing the necessary flexibility for activity/investment identification and

implementation, given the evolving institutional and reform process over the coming years in Kenya.

Currently, WSCRCP has two projects, the Kenya Water Security and Climate Resilience Project (WSCRCP-1) (P117635) and the Coastal Region Water Security and Climate Resilience Project (WSCRCP-2) (P145559). Additional Financing is being considered for WSCRCP-1 (P151660). This ESMF applies to those projects, as well as any future projects in the WSCR Program.

The WSCRCP-1 Project is a ‘‘framework operation’’ that will establish eligibility criteria and preparation guidelines that must be met in order for sub-projects/investments to be funded under the project. The framework is intended to set the ‘rules of the game’ by establishing a rigorous evidence-based investment selection and preparation process, including specifying the technical, economic, financial, environmental, social, institutional, etc. requirements for sub-project investments funding.

1.5 Sectoral and Institutional Context

Kenya’s low freshwater endowment of 526 m³ per capita per year puts it in the bottom eight percent of countries globally. The country is characterized by significant geographical disparities in water availability and use. Over 80 % of Kenya’s area is arid or semi-arid where a reliable supply of water is the limiting factor for economic development. Rapid increases in water demand are driven by population growth, economic growth, and urbanization. The increasing water stress also results in growing competition and conflicts over available water, as outlined in the Government of Kenya’s (GOK) economic development and poverty reduction plan, Vision 2030.

Lack of water security causes economic losses and constrains growth potential. Water is a prerequisite for economic production and human development. Securing a reliable supply of water for key economic areas will be critical to achieving Kenya’s development plans under Vision 2030. In 2004, the World Bank estimated that losses from climate variability average about 2.4 percent of GDP per year with a further 0.5 percent loss from water resources degradation, seriously impacting the country’s competitiveness. Water security is therefore critical for Kenya’s two economic engines, Nairobi and Mombasa, and for the Arid and Semi-Arid Lands (ASALs) and western provinces; all of which experience significant water stress. A number of opportunities exist in ASALs and western provinces to increase the productive use of water through multipurpose water resource development. The productivity and resilience of the agricultural sector could be increased through a reliable supply of water; significant opportunities exist to increase both large-scale and small-scale irrigation.

Kenya’s limited water storage capacity leaves the country vulnerable to climate and hydrologic variability. Current water storage in Kenya is estimated at 103 m³ per capita, of which 100 m³ per capita is single-purpose storage for hydropower production only. This means that only 3 m³ per capita of storage is available for water supply and other uses such as irrigated agriculture and livestock. No major dams have been constructed since Ndakaini dam in the mid-1990s, which supplies water to Nairobi.

Kenya also experiences significant hydrologic variability throughout and between years. Without sufficient water storage to lessen the effects of variability, frequent and severe floods and droughts have devastating economic and livelihood consequences. As noted in the World Bank Country Partnership Strategy (2010-2013), underinvestment in water storage leaves Kenya's economy highly dependent on favorable rainfall – which it cannot control – for agricultural production, electricity, and water supply. Increased water storage will increase the reliability of water supply and enable Kenya to harness its water resources in support of its economic growth agenda.

Inadequate water resources infrastructure development leads to low water supply reliability and limited access to water. Inadequate storage capacity to even out natural hydrologic variability, characteristic of Kenya, results in low water supply reliability. In other areas where sufficient water is available, it can often not be accessed due to low levels of water treatment and water distribution system infrastructure development. Water resources development through storage creation can help to increase water supply reliability, while improved water services infrastructure can help increase access. Sustainable groundwater development is also important, especially in the Ewaso Ng'iro Basin where surface water resources are very limited.

Catchment degradation compounds these challenges by increasing the intensity of flooding and reducing water storage capacity through reservoir sedimentation. Kenya's "water towers," which generate most of the country's runoff, are degraded due to poor land use practices, deforestation, encroachment on recharge areas, and pollution. Catchment degradation increases Kenya's vulnerability to hydrologic variability. Investments in storage must be accompanied by improvements in water service delivery and catchment protection.

1.5.1 Relationship to Country Partnership Strategy (CPS)

The proposed WSCR is closely related to the goals outlined in the 2010-2013 CPS for Kenya (March 2010-2012). The World Bank Country Partnership Strategy (2010-2013), underinvestment in water storage leaves Kenya's economy highly dependent on favorable rainfall – which it cannot control – for agricultural production, electricity, and water supply. One of the key structural issues identified in the CPS is that "increased water storage will increase the reliability of water supply and enable Kenya to harness its water resources in support of its economic growth agenda". The CPS specifically cites the identification of a pipeline of PPPs as important steps in this effort. The CPS also mentions potential PPPs in the transport, electricity, water supply and irrigation sectors as key steps toward the goal of "unleashing Kenya's growth potential," one of the three main objectives of the CPS.

The Program is directly aligned with Kenya's commitment to the adaptation to climate change agenda, including by supporting the mainstreaming of Kenya's National Adaptation Plan (under preparation) by water sector institutions. By financing water investments that not only build resilience to climate variability and change, but also enhance agricultural productivity and food security, the project supports Kenya's

development aspirations as enshrined in Vision 2030 and the continent's Comprehensive Africa Agriculture Development Program (CAADP).

The Program is also aligned with the World Bank's Africa Regional Strategy, and particularly Pillar Two – Vulnerability and Resilience. Reducing vulnerability and building resilience in the water sector is the central purpose of the proposed project. To this end, the project will support establishing the minimal water infrastructural platform (including water storage) required to buffer against the most severe hydrologic shocks including floods and droughts and to lift Kenya out of a history of food insecurity, low productivity and constrained growth. Beyond infrastructure investments, the project will support the enabling institutional and information base to ensure that water investments are sustainably planned, developed and maintained for long term prosperity.

The Program will build on other on-going activities in Kenya's water program. Its design has been informed by and it will complement the World Bank Water and Sanitation Service Improvement Project's (WaSSIP's) detailed water master plan studies for Nairobi and the Coast. In particular, the project is coordinating with WaSSIP on the possibility of financing Mwache dam, which is a part of the coast water master plan, and there is potential for other investments identified through the master planning process to be picked up by the WSCR. The World Bank Natural Resources Management (NRM) Project and Western Kenya Community Driven Development and Flood Mitigation Project are providing support for watershed management, irrigation, and flood control, and on-going experience has strengthened the water resources and climate risk management investments under the project.

1.5.2 Proposed Development Objectives (PDOs)

With its focus on achieving water security and resilience to climate variability and change, the WSCR will support the higher level objectives of inclusive green growth as a pathway to sustainable development. In particular, the WSCR will foster growth that is efficient in its use of natural resources, clean in that it minimizes environmental impacts, and resilient in that it reduces social vulnerabilities and accounts for natural hazards and the role of environmental management and natural capital in preventing physical disasters.

Water-related investments that strengthen climate resilient growth; and (ii) the project results—increased water storage for productive use (i.e. water supply, irrigation, hydro power), enhanced performance of water investments, and increased resilience to floods and droughts within project impact area(s)

The program is designed as a long-term and phased approach demonstrates the Bank's commitment to Kenya's water sector, including contributing to the Vision 2030, while providing necessary flexibility and opportunities for reframing the subsequent phases, as needed and if conditions on the ground change substantially (particularly in light of the evolving institutional and legal reform process).

1.5.3 Objectives of the WSCR-1 Project

The project development objectives of the WSCR-1 are to: to (i) increase availability and productivity of water for project beneficiaries; and (ii) enhance the institutional framework and strengthen capacity for water security and climate resilience in the country.

The Project is a ‘‘framework operation’’ that will establish eligibility criteria and preparation guidelines that must be met in order for sub-projects/investments to be funded under the project. The Framework is intended to set the ‘rules of the game’ by establishing a rigorous evidence-based investment selection and preparation process, including specifying the technical, economic, financial, environmental, social, institutional, etc. requirements for sub-project funding.

1.6 First Water Security and Climate Resilience Project

The achievement of Kenya’s development objectives on food security, poverty reduction, and economic growth depends on the ability of the country to efficiently use and manage its available water resources. Water is a productive input into priority economic sectors under Kenya’s Vision 2030 such as agriculture, industry, energy and tourism, and lack of water security causes economic losses and constrains growth potential. In 2004, the World Bank estimated that losses from climate variability average about 2.4 percent of Gross Domestic Product (GDP) per year with a further 0.5 percent loss from water resources degradation, seriously impacting the country’s economic growth and competitiveness.

With annual freshwater availability of approximately 526 m³ per capita, Kenya is already classified as water scarce country. Over 80 percent of Kenya’s area is arid or semi-arid where a reliable supply of water is a limiting factor for economic development. Rapid increases in water demand are driven by population growth, economic growth, and urbanization. Underinvestment in water infrastructure in Kenya for the last two decades has resulted in a total water supply storage capacity of 3.1 m³ per capita, one of the lowest levels in the world, which leaves the country vulnerable to climate and hydrologic variability. MEWNR through the State Department of Water is currently increasing water storage to 16 m³ per capita by 2012 through the construction of new water supply reservoirs, though much more is needed in order to achieve water security. Catchment degradation compounds these challenges by increasing the intensity of flooding and reducing water storage capacity through reservoir sedimentation.

In response to these challenges, the *Kenya Water Security and Climate Resilience Project - 1* (“the Project”), financed through a credit by the International Development Association (IDA), is implemented by MEWNR from 2013-2021. The project was scheduled for approval in FY13, and is expected to include the following activities: (i) water resources development investments, including storage for all purposes; (ii) climate resilience and climate risk management investments; and (iii) water resources management investments, including institutional support.

1.6.1 MEWNR/WSCR Components:

Component 1: Investments in Water Resources Development

This component supports climate resilience and water security for economic growth by financing the preparation of water resources development investments/sub-projects that meets the requirements of an Investment Framework (IF). The IF establishes the ‘rules of the game’ by making transparent the decision-making process on sub-project selection and ensuring that selected sub-projects are well-prepared, effectively contribute to realizing the objectives of building water security and climate resilience, and are implemented in a sustainable manner. The advantage of the framework approach is that it provides GoK, the World Bank and Development Partners the opportunity to invest early in ‘low hanging’ infrastructure and related activities provided that they are well-prepared, while establishing principles for selecting and preparing subsequent investments. In this regard, the IF serves as a short-term tool that provides quality control as the full-fledged investment planning process is established. However, the IF will have a longer term life, in that it will eventually guide future decisions on investments in the sector.

The IF consists of two parts: (i) sub-project selection/eligibility criteria and (ii) technical, economic, financial, social, environmental, and institutional guidelines for preparing investments at the feasibility level. Both parts of the IF must be met in order for a proposed sub-project to receive project financing. Sub-projects that could be considered for financing under the project include infrastructure and related activities for one or more of the following purposes:

- Bulk water supply, including storage for surface water use and flow regulation, and groundwater development;
- Water for productive and consumptive use;
- Flood management or drought mitigation; and
- Watershed management.

It should be highlighted here that during project preparation, this initial IF has been developed and tested on investment proposals at various stages of development, in particular, the Lower Nzoia Irrigation Project. This initial IF has been reviewed in order to ensure that it is robust and reflects the country’s capacity to prepare investments in accordance with it. During project implementation, the initial IF will be gradually refined (e.g., guidelines specific to each of the sub-project types will be developed) and capacity will be built to ensure the effective application of the IF. The Investment Framework is an essential component of the Water Security and Climate Resilience Program and as such, formal adoption of the IF by GoK will be one of the milestones for moving from phase 1 (APL-1) to phase 2 (APL-2) of the program.

Component 1 includes two sub-components: (i) Water Sector Investments and (ii) Water Investment Pipeline Facility. Each sub-component is described below.

Component 2: Water Sector Reforms and Planning and Management Instruments

Component 2 will support the current sector institutions, as well as the preparation, implementation and full functioning of the new legal and institutional framework resulting from alignments with the new Constitution of Kenya. It will also support the development

of integrated and participatory water investment planning that leads to the development of a preliminary pipeline of investment proposals. The overall objective of this component will be to strengthen the enabling institutional and legal framework to sustainably advance Kenya's vast water sector investment program in order to achieve water security and climate resilience. To this end, Component 2 includes two sub-components: (i) support for water sector reforms and (ii) strengthening water management and investment planning. Each sub-component is described below.

Sub-Component 2.1: Support for Water Sector Reforms

This sub-component will support the current sector institutions, as well as the preparation, implementation and full functioning of the new legal and institutional framework. The objective of this support is to enhance the capacity of water sector institutions to fulfil their mandates, policies and strategies specifically related to the sustainability of the water sector investment program. *Thus, the emphasis of this sub-component is on institutional and legal issues that contribute most directly to meeting project objectives and furthering the investment program.* Targeted support will also be provided on an as need basis to the broader water sector reforms that could *indirectly* impact on project objectives. As and when the need arises, such additional areas will be proposed to the project's governance structure (e.g., IMOC) for possible support under the project.

Support will be provided during the three stages of the reforms: (i) pre reforms, including the finalization of legal and institutional instruments and provisions for their implementation, including the water sector transitional plan; (ii) the transition period; and (iii) post reforms, in order to sustain operations and to support fully functional institutions. Given the focus of support under this sub-component, activities will target those institutions (and their successors) that are considered most critical to meeting project objectives. The activities under this sub-component are outlined below.

Contingency support to key water sector institutions; - This activity will provide expert, rapid response to resolve or mitigate critical legal and institutional challenges that may emerge and could cause significant risk to meeting project objectives. Contingency support could be provided in areas related to migrating and adapting institutional mandates; transferring staff and assets; adapting organizations, structures, policies and strategies; and establishing procedures to enhance performance of key entities. Contingency response will be provided throughout all stages of legal and institutional reforms, described above. Complementarily, this activity will also provide for rapid response to support the broader water sector when the reform process poses significant risks or threats to meeting project objectives.

Building the capacity of water sector institutions;-This activity will build and enhance the capacity of key entities to fulfil their core mandates and functions, as well as support non-core (yet critical) functions. This support will target those water sector institutions that are critical for meeting project objectives. The specific activities could include: assessing and mapping capacity needs for existing and new water sector institutions and developing staffing plans; supporting the capacity building of key entities so that they are able to develop and implement strategies, plans and core functions; supporting non-core but

critical functions, including procurement and financial management; safeguards due diligence; strengthening critical procedures; and developing human capacity, including assistance for research needs, training to enhance staff capacity, development of guidance manuals, etc. This activity would also support PMU capacity building activities to support transfer of its responsibility to agencies involved in the project.

Supporting institutional and legal reforms;- This activity will build the enabling legal and institutional foundation for the water sector by providing support for the implementation of legal and institutional reforms, as well as the identification of legal and/or institutional issues and necessary modifications. The specific activities will be undertaken throughout the three stages of reforms, discussed above, and will target those institutional and legal reforms that are critical for meeting project objectives. Specific activities could include: developing time-bound and costed plans to implement the new legal obligations of existing and new water sector institutions; developing and/or enhancing legislatively mandated strategies and implementation plans with stakeholder participation; supporting the development of strategies and plans required to mainstream key policies (including the Climate Policy, National Adaptation Plan, and Disaster Management Policy); developing a financing policy and strategy for the water sector; and facilitating public participation and consultations with water sector stakeholders.

Supporting the legal and institutional transition process; - This activity will support the constitutionally mandated water sector transition. The specific activities will focus on those entities and areas that most directly contribute to meeting project objectives and could include the following: supporting the rationalization and implementation of the water sector transition plan (including the migration and adaption of mandates, policies, strategies, programs and activities from existing to new entities resulting from the reform); supporting the Transition Authority to strengthen the water sector component of the national transitional plan; supporting key water sector institutions to implement the transition plans; and supporting aspects of the irrigation reform implementation strategy.

Sub-Component 2.2: Strengthening Water Management and Investment Planning

The specific objective of sub-component 2.2 is to develop, test and install a new system for integrated, multi-sector water investment planning, and support use of this system to develop a preliminary pipeline of investments (activity1). The water investment planning process will aim to generate well-defined, coordinated, and sustainable investment options that increase water available for productive, economic and social uses, strengthen livelihoods, and reduce climate risks. Both enhancing stakeholder participation and modernizing and improving the water knowledge base and monitoring system are central to the investment planning process and will be supported by activities 2 and 3 under this sub-component. Catchment or basin vulnerability assessments and the preparation of basin disaster risk management plans could also be supported. The activities under this sub-component are outlined below.

Developing and Applying a Water Investment Planning System This activity will support the development, testing and implementation of a multi-sector and multi-stakeholder planning system that can be utilized at the sub-catchment or catchment (basin) level, and

support using this planning system to develop a preliminary investment pipeline whose preparation activities can be financed under Sub-component 1.2.

Drawing from experiences elsewhere (e.g., Brazil, Uganda, etc.), the planning system will be initially piloted in two to three catchments or basins and scaled up based on lessons learned. The investment planning system may include state of the art instruments and systems such as: a decision support system, water system simulation model, Geographical Information System (GIS) based water information system linked to the Decision Support System (DSS) and model that includes hydrological and socio-economic data and a sub-catchment based hydrologic model. In catchments where flood and/or drought risks are a substantial problem, models would be developed to determine the frequency and magnitude of flood and drought risks and to map vulnerabilities so as to facilitate the development of sub-catchment (basin) flood and drought risk management plans.

This activity would also support upgrading and filling of data gaps in the catchment (basin) knowledge base, strategic assessments of social and environmental issues in the catchment (basin), and mapping of natural habitats and biodiversity hotspots within the catchment (basin) so that environmental services can be modelled. To this end, this activity would finance acquisition of data sets, including satellite imagery; surveys and mapping exercises; acquisition of models and analytical tools; consultants for special studies and surveys; and the actual preparation of catchment and sub-catchment water allocation, water management and investment plans. The activity will also support preparation of a strategic environmental and social assessment (SESA) that will look at the linkages between the proposed investment plan and the likely or potential impacts on the ground. The SESA will identify appropriate criteria to be included in the planning system and ensure that the environmental and social dimensions at the strategic/sectoral level are embedded in the overall approach, including, in particular, the cumulative impacts aspects.

This activity will also support application of this planning system towards development of a preliminary investment pipeline based on and consistent with the catchment and sub-catchment water allocation, water management and investment plan. This will include support to the relevant sponsor agencies to carry out the work required for building the pipeline. Investment proposals that could feed into the preliminary investment pipeline will be selected by the Project Management Unit (PMU), in close collaboration with relevant sponsor agencies, using the Investment Framework. Pre-feasibility level investment proposals (developed under Component 1) will be incorporated in the catchment planning process to develop catchment water allocation, water management and investment plans. The sub-project investments recommended in the investment plan will be screened by the PMU for addition to the preliminary investment pipeline for FS under Component 1.

Developing a System for Stakeholder Participation;- This activity will support the development of a system for stakeholder participation at the national, regional and catchment levels in order to: (i) raise awareness and promote greater understanding and appreciation of the catchment water resource system, its potential and its limits; (ii) facilitate greater “buy-in” or commitment on the part of catchment stakeholders to the plans

for water management, water allocation, and investment in the catchment; (iii) reduce stakeholder vulnerability by improving access to information, including on drought and flood risks; and (iv) create continuing mechanisms and processes that are accepted by water users and other key stakeholders and institutionalized within the catchment for conflict resolution, water regulation and enforcement, and other water management measures. This activity will finance specialized consultancies to develop a system, processes and procedures for stakeholder identification and mapping, stakeholder organization and mobilization, stakeholder training, and communications. These consultancies will also provide training and capacity building to support the implementation of this system of enhanced stakeholder participation in the selected two to three pilot catchments or basins.

Strengthening Water Information System; - This activity will finance the improvement and modernization of the Water Resources Information System (WIS). The enhanced WIS would support improved planning, regulation and enforcement; water resource assessments using hydrologic models; water system models and the DSS; and disaster risk (flood and drought) management plans. The WIS would include the hydro-meteorological monitoring network, measurement, data transmission, data storage, and data analysis and data dissemination. The system will monitor water flows and discharges, water quality and sediment loads, and groundwater availability/levels and quality using real-time, low cost modern communications. The features and details of the WIS design and implementation will be need-based and utilize current and projected information and communications technology (ICT) infrastructure in Kenya, including provision for future upgrading and expansion. Lessons from previous initiatives will be taken into account in systems design. As a first step, this activity will finance a consultancy to upgrade the design and modernize the WIS.

Component 3: Support to Project Implementation

In the uncertain and dynamic environment arising from the alignment of the water sector to the new Constitution of Kenya, it is essential that implementation of project is based on an overall design and approach that ensures continuity, avoids unnecessary delays and cost increases, and mitigates against the potentially harmful effects of gaps and issues that will inevitably emerge during the transition period and as the new institutional, legal and policy framework of the sector is put in place. For these reasons, a Project Management Unit (PMU) has been established. The PMU's design, including its roles and functions, are summarized below.

This component is supporting the establishment of the PMU to provide for effective project implementation throughout the reform period (that is, prior to the launch of the reforms, during the transition period, and beyond, to the extent needed). Specifically, this component will finance the required office space, goods (e.g., vehicles), equipment (e.g., computers), staff, consultant services, travel, training and operating costs that will allow the PMU to carry out its responsibilities for project implementation. These responsibilities include project management and coordination, procurement and financial management, project monitoring and evaluation (including impact evaluation), social and environmental safeguards management and oversight, strategic project communications and outreach,

investment sub-project selection and execution (for component 1), and other activity execution (for component 2).

I.7 Project Institutional and Implementation Arrangements

Under Component 3 of the project, a Project Management Unit (PMU) has been established within the MEWNR. The PMU reports to the Permanent Secretary (PS) of State Department of Water and is granted a high degree of autonomy to ensure efficient and timely implementation of the project. The PS may delegate his authority to a senior officer (director level), to whom the PMU will directly report. The PMU will be granted operational autonomy to apply rules, criteria, and procedures agreed with the World Bank. The PS, as the accounting officer of, will delegate financial management, procurement, tender evaluation, selection and contracting responsibilities to the PMU. Notwithstanding these provisions, the PMU's actions will be accountable to the MEWNR and subject to review by Kenya Auditor General.

The PMU is a transitional entity. One of its important roles will be to support development within the current and successor agencies – which would typically implement most of the project's investment sub-projects and activities – the required capacities for procurement, financial management, monitoring and evaluation, safeguards implementation, and sub-project and activity execution. In the interim, the PMU will undertake these roles on behalf of those agencies through the services of consulting firms (e.g., Engineer, refer below), or by procuring an appropriate Implementation Support Consultancy that would be embedded within each agency.

The core roles of the PMU are fiduciary (procurement and financial management), management and coordination, reporting, monitoring and evaluation, the application of the Investment Framework (including safeguards frameworks), and monitoring of and technical support to the institutional and legal reform process. It will review the results and recommendations of each pre-feasibility and feasibility study, apply the Investment Framework and make recommendations on investment ready sub-projects. The PMU will ensure the application of social and environmental frameworks (ESMF, VMGF and RPF) by assessing the capacity of sponsor agencies to prepare safeguards instruments and to implement safeguards requirements (as the case may be). In the event that sponsor agencies are found to have insufficient capacity in these areas, it will work with the agency to prepare a support plan and TORs, as well as procure the additional required services. The PMU will monitor the activities of all agencies involved in the project and their consultants, evaluate performance, propose measures to enhance performance and ensure timely implementation, and provide regular reporting to the World Bank.

For works under Component 1, the PMU will procure and contract the services of an Engineering Firm (The “Engineer”) based on a TOR prepared in collaboration with the relevant executing agency. The Engineer will be responsible for reviewing or preparing detailed designs and bidding documents (in case they would not be ready), completing the tender documents and selecting the contractor(s) in collaboration with the PMU. The role of the Engineer is to provide expert advice and represent the PMU when administering the construction contract, to make certain decisions that become binding on the parties to the

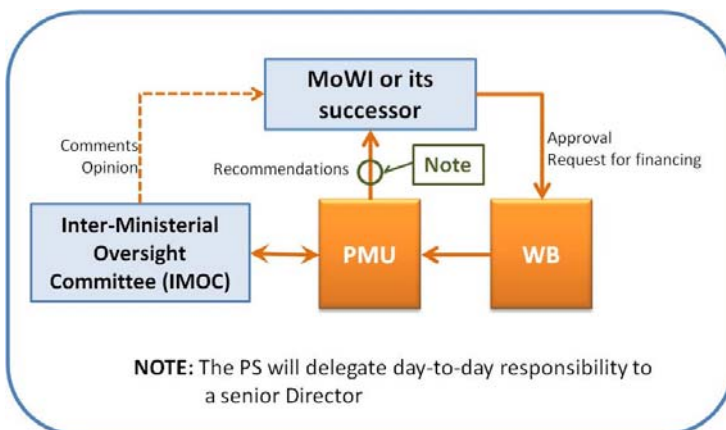
construction contract(s), and to provide direction to the contractor, including for example, issuing certificates, ordering variations and payment schedules, etc.

A specific sub-unit of the PMU, the Legal and Institutional Reforms Support Sub-Unit (LIRSSU), will be established to support the legal and institutional reforms associated with aligning the water sector to the new Constitution of Kenya (sub-component 2.1). The LIRSSU will be responsible for providing strategic and technical input and oversight to support the institutional and legal reform process, including by directly executing specific activities on behalf of relevant agencies and/or by managing and supervising consultancies that provide specialized support. To this end, the LIRSSU will undertake the requisite work to stay fully abreast of the status of the evolving institutional and legal reforms, as well as any issues and challenges that may arise. It will work pro-actively to identify needs and recommend areas of targeted support to mitigate issues associated with the reform process. It will also accept proposals for support on a demand basis to provide “just in time” analytical support for the process.

The PMU Director will have a core staff of professionals with the necessary expertise and experience to undertake the PMU’s core functions. These could include civil service staff on secondment (in accordance with current civil service rules) or those from the private sector. The PMU will be empowered to undertake autonomous and competitive staff selection, based on criteria agreed with the World Bank.

An Inter-Ministerial Oversight Committee (IMOC) has been established, primarily as a consultative group and to provide high level, strategic guidance on project activities. It will be comprised of the permanent secretaries (PSs) of ministries with a relevant role in the water sector (including Ministry of Regional Development Authorities, Ministry of Agriculture, and Ministry of Environment, Water and Resources or their successors), as well as the Ministry of Finance. The IMOC is chaired by the PS - MEWNR (formerly MOWI) (or its successor), who will make all final decisions related to the project. Membership can be extended beyond this core group to other agencies on an as need basis.

Figure 1: WSCR-PCU Design



1.7.1 Implementation Arrangements

Screening and sub-project selection. There are three points in the process of developing the investment ready pipeline (refer Figure 2). The PMU will collaborate with sponsor agencies to develop the preliminary pipeline of projects proposed for feasibility study (Component 2.2), and it will review the results of feasibility studies (Component 1). In the latter case, the PMU will apply the Investment Framework (IF) to identify and select viable investment ready sub-projects; in the former case, to select sub-projects for pre-feasibility work and the preliminary investment pipeline, a short form of the IF will be developed under the project and applied by the PMU.

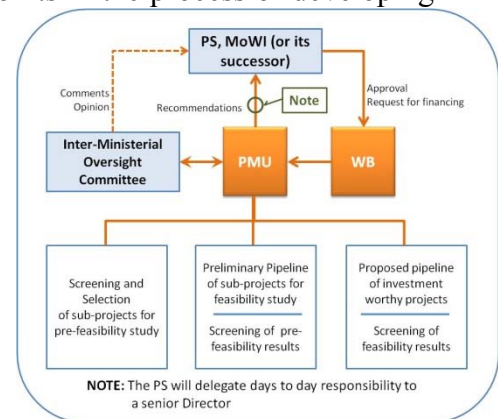
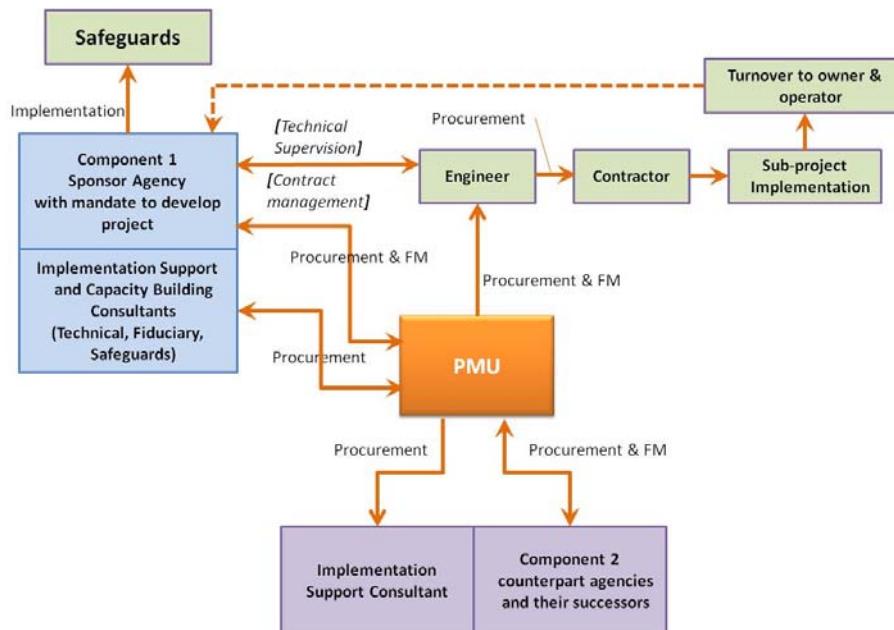


Figure 1 - Screening and selection of sub-projects and consultation with the IMOC and with PS approval

As shown in Figure 2, the screening results and recommendations of the PMU will be reviewed by the IMOC. With the IMOC's advice and suggestions, the PMU will make appropriate revisions and present its recommendations to the PS. The PS will approve the PMU's proposals –sub-projects for which pre-feasibility studies and feasibility studies will be undertaken and sub-projects to add to the pipeline of investment ready sub-projects – and authorize the PMU to proceed with the next steps.

Sub-project preparation; - The next step in the process of pipeline development is to undertake the appropriate preparation studies for each of the agreed sub-projects. In the case of the preliminary investment pipeline (Component 2.2), the PMU will assist the sponsor agency or its successor to prepare the TOR using a generic or standard pre-



feasibility study TOR approved by the Bank and will procure the services of a consulting firm to undertake the study. The PMU may bundle several pre-feasibility TORs into a single procurement, particularly when the sub-projects are clustered in a single or adjacent

sub-basins. Cost estimating factors and assumptions will be developed in consultation with MEWNR and the World Bank. A similar approach will be used for sub-projects selected from the preliminary pipeline for feasibility study (Component 1.2), except that they will not be bundled unless they could or should be (for example, a storage dam and the irrigated area served by the associated reservoir).

Works- Typically, a PMU would not be directly involved in the execution of works, but none of the agencies that are likely to sponsor a sub-project for implementation (refer Figure 3) have sufficient capacity to undertake the responsibilities and functions of executing agency for Component 1 investment ready projects. The approach in these cases will be as shown in the **Figure 3 on the previous page**. The PMU will procure and contract the services of the Engineer based on a TOR prepared in collaboration with the sponsor agency.

The Engineer will be responsible for reviewing or preparing detailed designs and bidding documents (if they were not prepared by the feasibility study consultant), completing the tender documents and selecting the contractor(s) in collaboration with the PMU. The role of the Engineer is to provide expert advice and represent the PMU when administering the construction contract, to make certain decisions that become binding on the parties to the construction contract(s), and to provide direction to the contractor, including for example, issuing certificates, ordering variations and payment schedules, etc. The Engineer will act independently, fairly and impartially as a professional engineer.

The PMU will take steps to build the capacity of the sponsor agency, such that it would eventually acquire sufficient capacity to undertake these technical tasks, and, in particular, technical supervision and contract management. The PMU may procure the services of an Implementation Support Consultant to be embedded into the sponsor's organization in order to strengthen capacity. In some cases this may be sufficient to allow the sponsor agency to assume these important roles.

Safeguards instruments preparation and implementation; - It is the responsibility of the sponsor agency to prepare social and environmental assessments during the feasibility study and to submit to the World Bank the environmental and social impact assessment (ESIA), the resettlement action plan (RAP), and the vulnerable and marginal groups plan (VMGP) to be implemented with the sub-project and during its operation by the owner and operator. These documents are reviewed by the World Bank and NEMA and must receive a no-objection from the World Bank and approval of NEMA before the sub-project can be implemented. The implementation safeguards instruments requires competent staff, and if consultants are used to supplement appropriate sponsor staff they must be on NEMA's approved list of qualified consultants. None of the likely sponsor agencies (e.g., National Irrigation Board,) have been assessed to have sufficient capacity to take full responsibility for safeguards preparation and implementation. Hence, the PMU will agree with the sponsor agency on a support plan, consultant TOR and procure the necessary services.

1.8 Alternative Considerations

1.8.1 No Project Scenario

The no-project scenario means that the status-quo is maintained and the funding gap of approximately several billions Kenya Shillings per year for the water sector especially in regard to security and climate resilience may remain. Under investment in water infrastructure in Kenya for the last two decades will persist and result in decreased water supply storage capacity per capita in a country which already has one of the lowest levels in the world, which leaves the country vulnerable to climate and hydrologic variability.

2 METHODOLOGY AND CONSULTATION

2.1 Detailed & In-depth Literature Review

Review on the existing baseline information and literature material was undertaken and helped in gaining a further and deeper understanding of the proposed project. A desk review of the Kenyan legal framework and policies was also conducted in order to the relevant legislations and policy documents that should be considered during project implementation. Among the documents that were reviewed in order to familiarise and further understand the project included:

World Bank Related Documents

- *Aide Memoire for the WSCR*
- *World Bank WSCR Draft Project Appraisal Document (PAD)*
- *World Bank Safeguards Policies*

Kenyan Legislative Documents

- *Constitution of Kenya*
- *Environmental Management and Coordination Act (1999)*
- *Water Act*
- *Energy Act*
- *Land Act*
- *Public Health Act*
- *Wildlife Act*
- *Forest Act*

2.2 Interactive Discussions

Stakeholder consultation formed part of the methodology in preparing this ESMF where the project interested and affected stakeholders who could be identified at this early stage were consulted. The issues raised and concerns expressed including possible mechanisms of addressing these issues and concerns are appended as **Annex B** of this document. The stakeholder consultation was significant to the preparation of this ESMF and formed the basis for the determination of potential project impacts and design of viable mitigation measures.

2.3 Preparation of ESMF

Preparation of the ESMF included the following stages:

- *Collation of baseline data on the environmental conditions of the country in general;*
- *Identification of positive and negative environmental and social impacts of sub projects investments;*
- *Identification of environmental and social mitigation measures;*
- *Preparation of screening procedures to be for sub project proposals;*
- *Formulation of environmental and social monitoring plans.*

3 BASELINE DATA

This section describes the overall baseline condition of Kenya in terms of bio-physical environment, as well as the socio-economic.

3.1 Location and Size

Kenya (**Figure 4**) is located in the eastern part of the African continent approximately between latitudes 4o 21’ N and 4o 28’ S and between longitudes 34o and 42o E. Kenya is bordered by Uganda to the west, Ethiopia and South Sudan to the north, Tanzania to the south and Somalia and the Indian Ocean to the east. Kenya covers an area of approx. 587,000 km², of which 11,000 km² consists of water bodies. Kenya’s landscape is grouped into geographical zones including; the Savannah Lands covering most of the arid and semi-arid areas, the Coastal Margin, the Rift Valley, the Highlands and the Lake Victoria Basin.

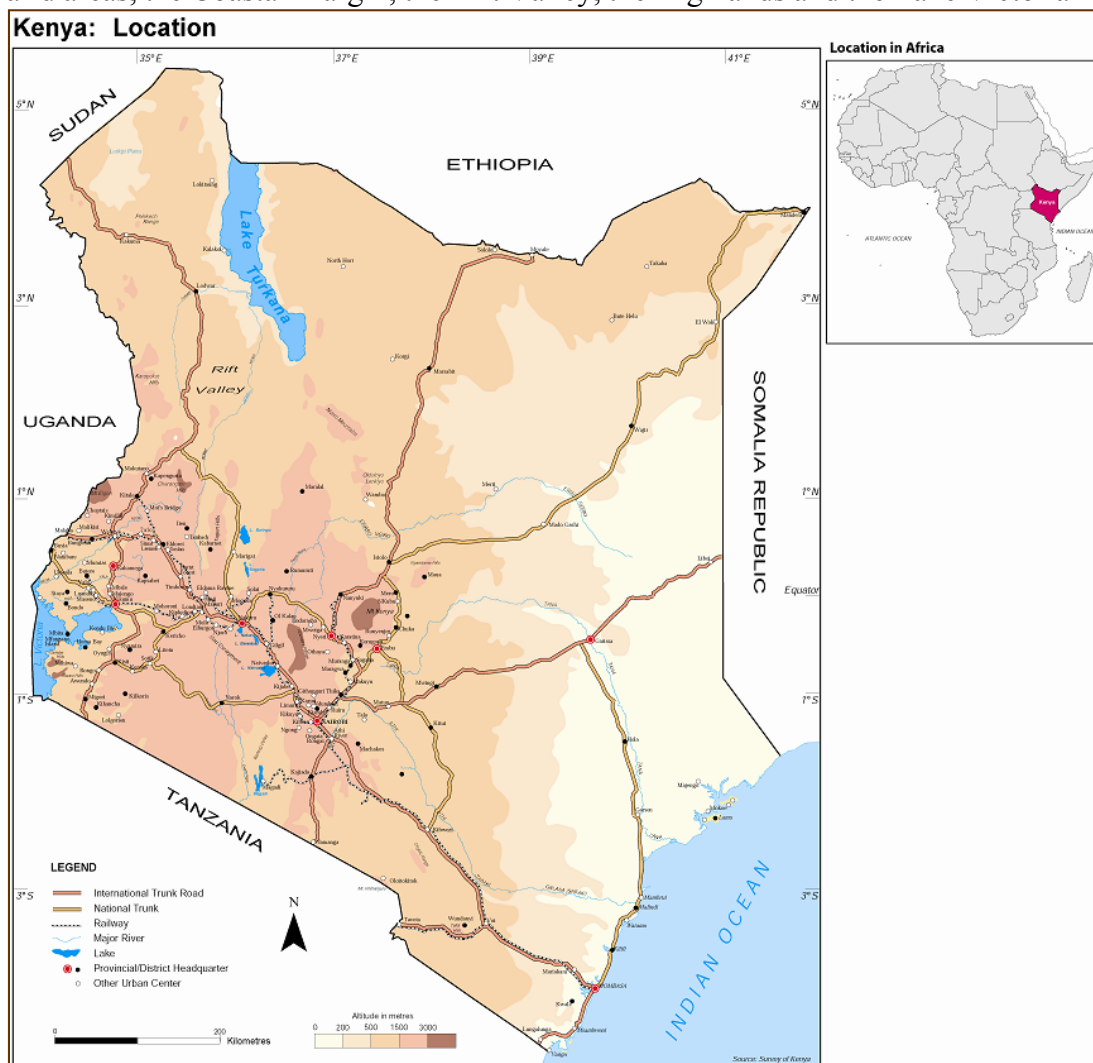


Figure 4: Map of Kenya

Kenya sits on the Equator in East Africa. It is bordered by the Indian Ocean to the east, Somalia and Ethiopia to the north, South Sudan to the Northwest, Tanzania to the South, and in the West, by Uganda. Kenya is Africa’s tenth most populated country and ranks 22nd in terms of its size (Source: Survey of Kenya 2003)

Kenya lies along the equator in East Africa. Most of the country consists of high plateau areas and mountain ranges that rise up to 3,000 m and more. The plateau area is dissected by the Eastern Rift Valley, which is 40-50 km wide and up to 1,000 m lower than the flanking plateaux. The narrow coastal strip along the Indian Ocean is backed by a zone of thorn bush-land. Some areas in central Kenya, at the flanks of the Rift Valley, and in western Kenya, close to Lake Victoria, are very densely populated.

The land stretches from the sea level (Indian Ocean) in the east through a diversity of landforms. From the coast, the altitude changes gradually through the coastal belt and plains (below 152 metres above sea level), the dry intermediate low belt to what is known as the Kenya Highlands (over 900 metres above sea level). The country is split by the Great Rift Valley into the Western part, which slopes into Lake Victoria from the Mau ranges and Mount Elgon (4,300m) and the Eastern part dominated by Mt. Kenya and the Aberdare Ranges which rise to 5,200m and 4,000m respectively.

3.2 Physical Environment

3.2.1 Climate

Kenya enjoys a tropical climate. It is hot and humid at the coast, temperate inland and very dry in the north and northeast parts of the country. The average annual temperature for the coastal town of Mombasa (altitude 17 metres) is 30.30 Celsius maximum and 22.40 Celsius minimum, the capital city, Nairobi (altitude 1,661 metres) 25.20 Celsius maximum and 13.60 Celsius minimum, Eldoret (altitude 3,085) 23.60 Celsius maximum and 9.50 Celsius minimum, Lodwar (altitude) 506 metres) and the drier north plain lands 34.80 Celsius maximum and 23.70 Celsius minimum.

The long rains occur from April to June and short rains from October to December. The rainfall is sometimes heavy and when it does come it often falls in the afternoons and evenings. The hottest period is from February to March and coldest in July to August.

3.3 Topography and Drainage

The Republic of Kenya has an area of approximately 582,646 sq. km. Only 20% of the land area can be classified as medium to high potential agricultural land and the rest of the land is mainly arid or semiarid. This water surface comprise of a number of small lakes with fluctuating limits as well as part of Lake Victoria and most of Lake Turkana. Only 3,831 km² of Lake Victoria is in Kenya while most of Lake Turkana lies in Kenya. Kenya's coastal line extends approximately 402 km along the Indian Ocean.

Topographically, the country may be divided into 4 distinct geographical and ecological regions or zones with different patterns of land use, namely; the coastal plain, the arid low plateau, the highlands, and the Lake Victoria basin. The rainfall patterns are extremely varied but generally follow those regions, with the Lake Victoria basin receiving the heaviest and most consistent rainfall.

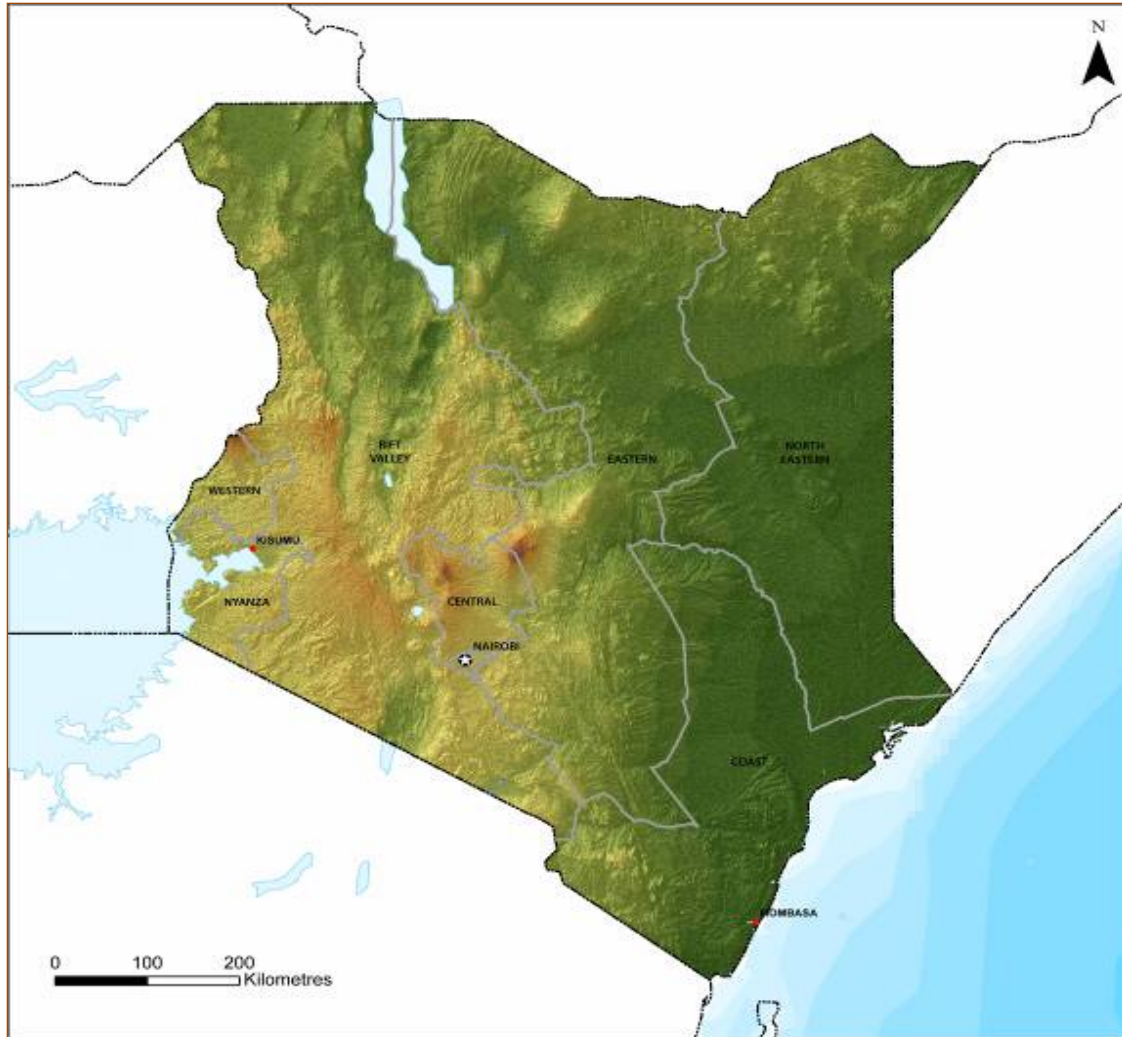


Figure 5; Relief Map of Kenya

Kenya's relief can be roughly divided into six major regions: the lowlands of the coastal belt and plains; the Buruma-Wajir lowland belt; the Foreland Plateau; the Highlands (East and West); the Nyanza Low Plateau (part of the Lake Victoria Basin); and the Northern Plainlands (Survey of Kenya 2003).

The drainage is determined primarily by the Rift Valley, which roughly bisects the highland zone from North to South. Within the Rift Valley, drainage is into a chain of lakes, which have no surface outlet. West of the Rift Valley rivers drain into Lake Victoria and to the East, rivers follow a southeasterly course into the Indian Ocean.

In some areas, topography and rainfall - runoff regime have created many semi-closed, poorly drained or overflow areas that retain a substantial amounts of runoff which originate on the upslope areas. On groundwater, the country is divided into three broad areas. These are volcanic rocks, pre-cambrian metamorphic basement rocks and pre-cambrian intrusive rocks and sedimentary rocks.

The volcanic rocks cover 26% of the country, more commonly in the western half of Kenya. Groundwater sources occur in old land surfaces, which are weathered zones between successive lava flows that signify periods of quiescence. Fractures, faults, fissures

and joints are also useful. Water is mainly of bicarbonate type with low total dissolved solids. Local pockets of high fluoride are believed to be of volcanic and fumarolic origin.

The pre-cambrian rocks cover an area which is approximately 17% of the country and are widely distributed in the central, western and north western parts of Kenya. Water in these areas occurs in deep horizons of faults, and fractures. Aquifers are generally unconfined and yields and water levels vary within rocks. The sedimentary rocks cover 55% of the country, predominantly in the eastern parts. These areas have loose and permeable sediments. The aquifers are shallow and unconfined and most of them are generally saline. The salinity results from accumulation of solute evaporite minerals within the sediments.

3.3.1 Hydrology

Kenya's four largest inland water bodies (Lake Victoria, Lake Turkana, Lake Naivasha, and Lake Baringo) account for about 1.9 per cent of the land area. The majority of Kenya's lakes, including both saline and freshwater, and closed and open basin systems, are located within the Great East African Rift Valley. Kenya's major permanent rivers originate in the highlands. The Nzoia, Yala, Sondu Miriu, and Migori Rivers drain into Lake Victoria. The Ewaso Ngiro River is found in the northeastern part of the country and the Tana and Athi rivers flow in the southeastern part. The rivers draining into Lake Victoria (covering over 8 per cent of Kenya's land area) provide about 65 per cent of Kenya's internal renewable surface water supply. The Athi River drainage area (11 per cent of Kenya's land area) provides 7 per cent, the lowest share among Kenya's major drainage areas (Survey of Kenya 2008 and MOWI.).

3.3.2 Soils and Geology

The geology of Kenya is characterized by Archean granite/greenstone terrain in western Kenya along Lake Victoria, the Neoproterozoic 'Pan-African' Mozambique Belt, which underlies the central part of the country and Mesozoic to Recent sediments underlying the eastern coastal areas. The Eastern Rift Valley crosses Kenya from north to south and the volcanics associated with rift formation largely obliterate the generally north-south striking Neoproterozoic Mozambique Belt (Schlueter 1997). Rift Valley volcanogenic sediments and lacustrine and alluvial sediments cover large parts of the Eastern Rift.

About 59 per cent of Kenya's soils have moderate to high fertility, meaning they are theoretically suitable for growing crops. Fertility levels, however, depend on the amount of rainfall. Given the distribution and variability of rainfall in Kenya, only about 17 per cent of the land area has medium to high potential for crops, while the remaining 83 per cent is classified as arid and semi-arid and so of low crop growing potential (Survey of Kenya 2003). Drylands, however, provide essential habitat for about half the country's livestock and 70 per cent of Kenya's wildlife (UNCCD 2002).

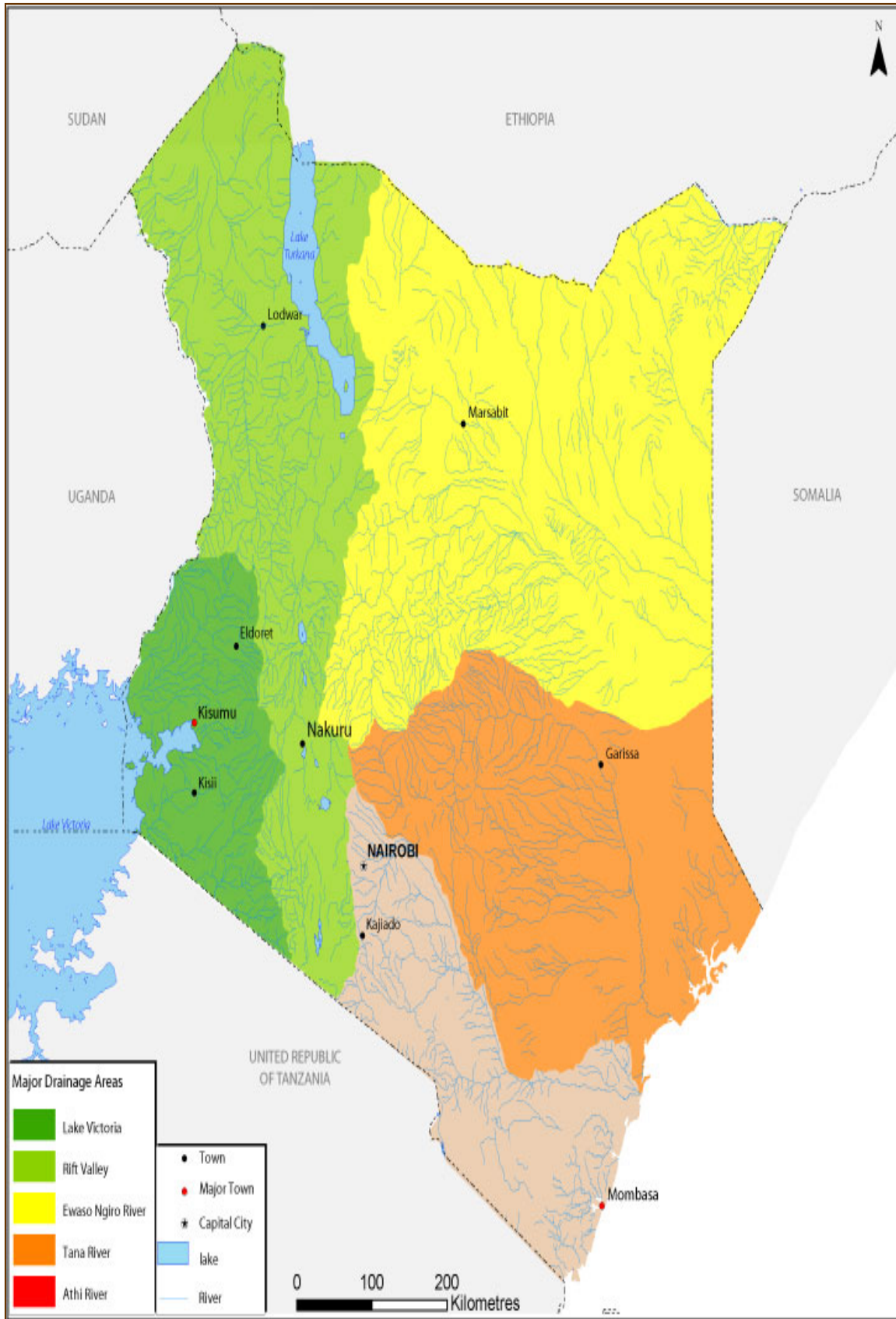


Figure 6: Drainage systems; Source: [WRI et al. 2007](#).

3.4 Land Use

Approximately seventy five per cent (75%) of the country's population lives within the medium to high potential (20% of land area) and the rest in the vast Arid and Semi-Arid Lands (ASALs). One consequence of this is that size and distribution of land varies quite widely as does population density which ranges from as low as 2 persons per sq. km. in the ASALs to a high of over 2000 in high potential areas.

3.5 Biological Environment-Ecosystems

Kenya's land is covered by different types of vegetation according to the climate, topography, and other bio-physical factors. The major categories are grassland, forests, semi-deserts, and mountains. Human impacts on the land continue to alter the distribution, amount, and health of these ecosystems (Survey of Kenya 2003).

3.5.1 Grasslands

Grasslands dominate Kenya's land cover and include what is known as 'savanna' vegetation. Permanent meadows and pastures occupy about 21.3 million ha, in Kenya, which represent 2.4 per cent of Africa's total meadows and pastures (FAO 2008).

3.5.2 Forests

Forests cover 2.9 per cent of Kenya's land area (KFMP 1995). The main forest types are moist highland forest, dry forest, tropical rain forest, coastal forest, and riverine and mangrove forests (Survey of Kenya 2003). Although they are not extensive land cover, Kenya's forests provide significant goods and services, including numerous non-timber forest products that provide local people with food, fibres, medicines, and shelter. The closed canopy forests are habitat for a disproportionately large percentage of the country's wildlife and other biodiversity. It is estimated that they harbor 40 per cent of large mammals, 30 per cent of birds and 35 per cent of the nation's butterflies. About half of Kenya's threatened mammals and birds are found in its forests (Survey of Kenya 2003).

3.5.3 Arid and semi-arid lands (ASALS)

Over 80 per cent of Kenya is arid or semi-arid lands (ASAL). These lands are home to over 10 million people. The ASAL has over 70 per cent of the livestock population and 90 per cent of the wild game, which attract tourism to the area. The ASAL also contains much of Kenya's commercial mineral wealth (WRI et al. 2007 and MSDNKAL 2008).

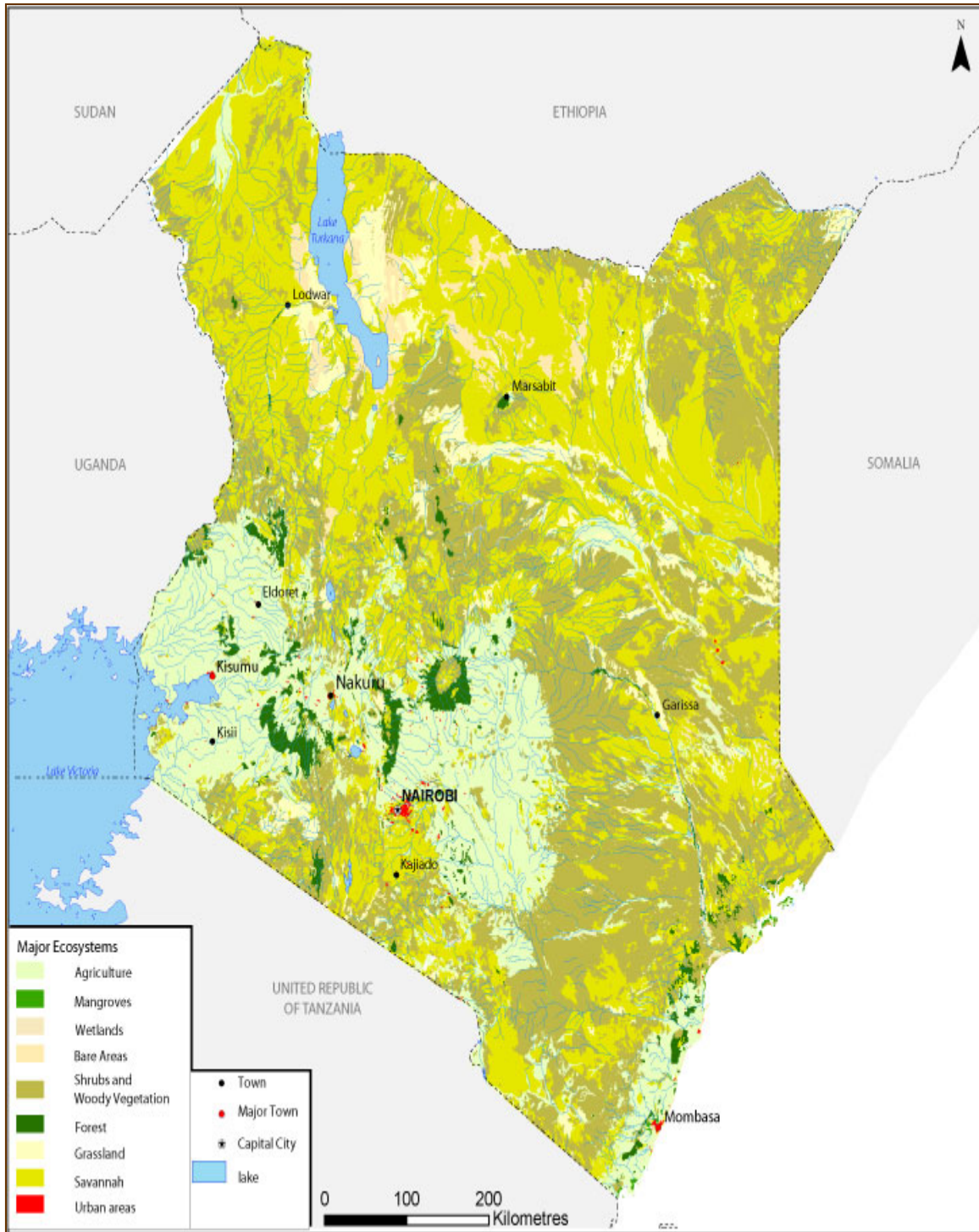


Figure 7: Major ecosystems in Kenya

3.5.4 Mountain vegetation

Kenya's five major mountainous regions (Mount Kenya, Mount Elgon, Aberdare Range, Mau Escarpment, and Cherangani Hills) are surrounded by foothills and high-elevation plateaus. Mountainous regions harbor unique types of vegetation due to the micro-climates

that occur on their slopes. Different altitudes, aspects, and moisture availability create a large variety of ecosystems over relatively small areas.

3.5.5 Freshwaters and wetlands

Kenya's wetlands occur in both fresh and salt waters. They include coral reefs, marine inshore waters, mangroves, deltas, creeks, lake shores, rivers, marshes, ponds, impoundments, and mountain bogs. They are a source of water, provide numerous ecosystem services, and have a high diversity of characteristic biota or living organisms (Ramsar Convention 2001).

Kenya's wetlands cover about 14 000 km² (2-3 per cent of the country's surface area) and are found along the major rivers. In addition, many seasonal and temporary wetlands occur all over the country, including rock pools and springs in the southern part of Nairobi, west of Ngong Hills, and at Limuru. Wetlands have also been created by damming water for hydroelectricity and water supplies, and some wetlands have been built to treat wastewater (Macharia 2004).

Wetlands are a source of social-cultural and economic potential providing people with food, medicinal products, firewood, and materials for building and handicrafts. Rapid population growth, agricultural operations, and encroachment of development pose a serious threat to wetlands. Expanding industries and urban centers discharge their waste water into them and the polluted waters are unhealthy for human and livestock use, destroy aquatic life, and restrict recreation opportunities (Ramsar Convention 2001).

3.5.6 Marine and coastal areas

Kenya's marine and coastal environments include the Indian Ocean's territorial waters and the immediate areas that border the ocean. The Kenyan coast stretches 550 kilometers from the Somali border in the north in a south-westerly direction to the border with Tanzania. The fringing coral reef (comprised of about 140 species of hard and soft corals) runs between 0.5 km and 2 km off-shore with occasional gaps at the mouths of rivers and isolated areas facing creeks. Beaches, cliffs, or mangrove forests dominate the shoreline in most areas. The coral-reef system, mangrove swamps, and hinterland provide unique natural landscapes and a wide range of biodiversity resources of special conservation concern.

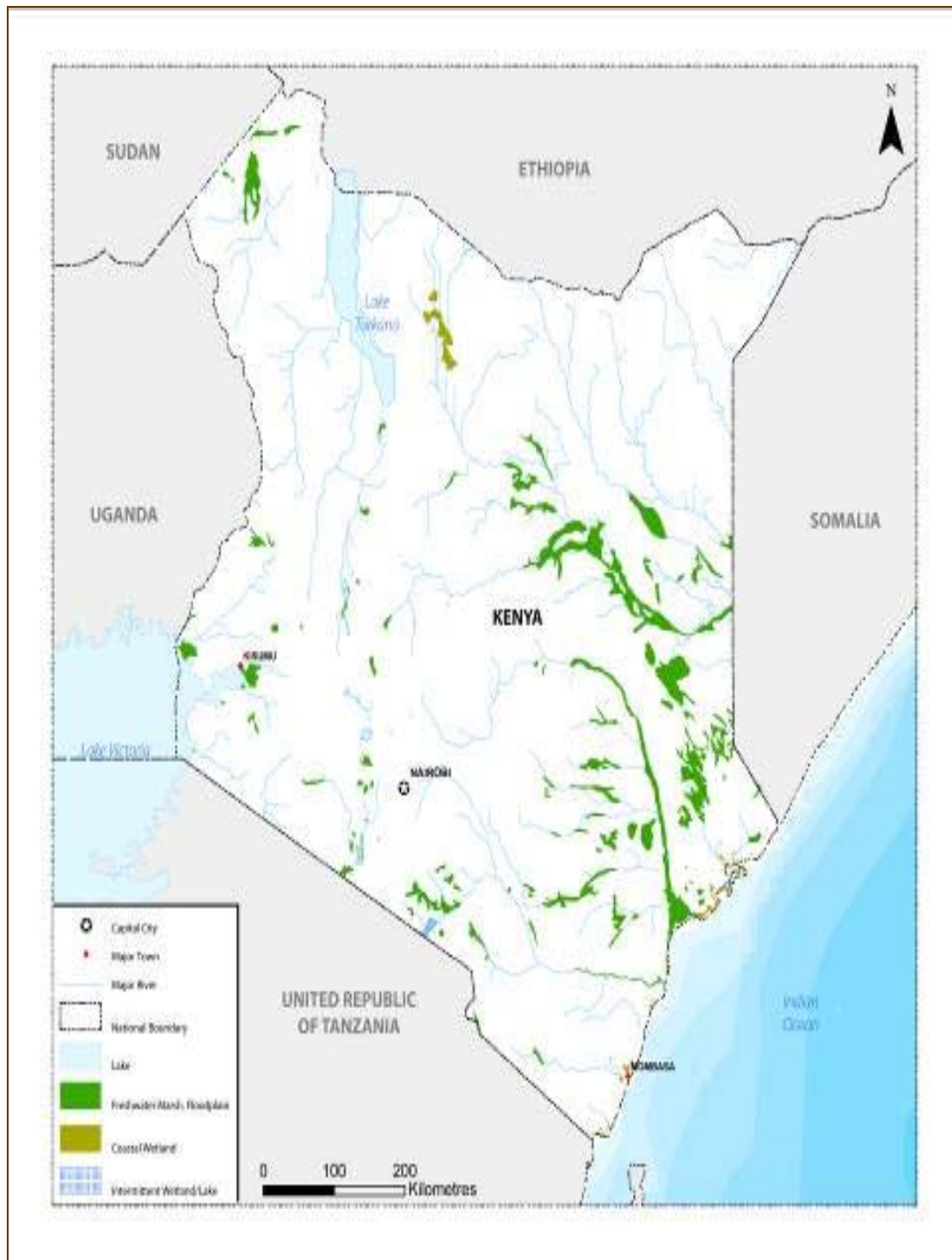


Figure 8: Kenya's Largest Wetlands

They include the shallow lakes Nakuru, Naivasha, Magadi, Kanyaboli, Jipe, Chala, Elmentaita, Baringo, Ol'Bolessat, Amboseli and Kamnarok; the edges of Lake Victoria and Lorian, Saiwa, Yala, Shompole swamps; Lotigipi swamp (Lotigipi) and Kano plains; Kisii valley bottoms and Tana Delta; and coastal wetlands (Source: WWF 2005).

3.5.7 Wildlife

Kenya's game parks and spectacular wildlife attract nearly two million tourists each year (UN-Water 2006) and generate important domestic revenues. Wildlife conservation is thus

a high priority. Formed in 1946, Nairobi National Park, just outside the city, was the country's first protected area. By 2008, about 75 237.9 km² (WCPA 2007) of the nation's land area had been set aside as national parks and game reserves.

Wildlife is also protected by bans on game hunting, killing animals even when they attack, and the trade in ivory and skins. Nevertheless, poaching is a significant threat to many species including leopards, cheetahs, lions, elephants, and rhinoceroses. Efforts are being made to restore populations of the endangered African elephant and black rhino, and an aggressive campaign is being waged against poachers. Moreover, increased pressure on marine resources has led the Kenyan government to establish a system of protected areas managed by the Kenya Wildlife Service (KWS) to conserve and manage the most important ecosystems along the coast. In total, Kenya has five Marine Protected Areas (MPA's).

Examples of endangered species include the Sokoke scops owl (*Otus ireneae*); Taita blue-banded papilio (*Papilio desmondi teita*); the highly endangered Tana River mangabey (*Cercocebus galeritus*) and the Tana River red colobus (*Piliocolobus rufomitratu*); the green sea turtle (*Chelonia mydas*) and the critically endangered hawksbill turtle (*Eretmochelys imbricata*).

In addition to threats to species biodiversity, a number of types of ecosystems are disappearing or are in dangerous decline due to human activities. These include the slopes of Mount Kenya and coastal forests as well as the Horn of Africa Acacia Savannas, a major centre of endemism for dry land plants.

Physical Regions of Kenya

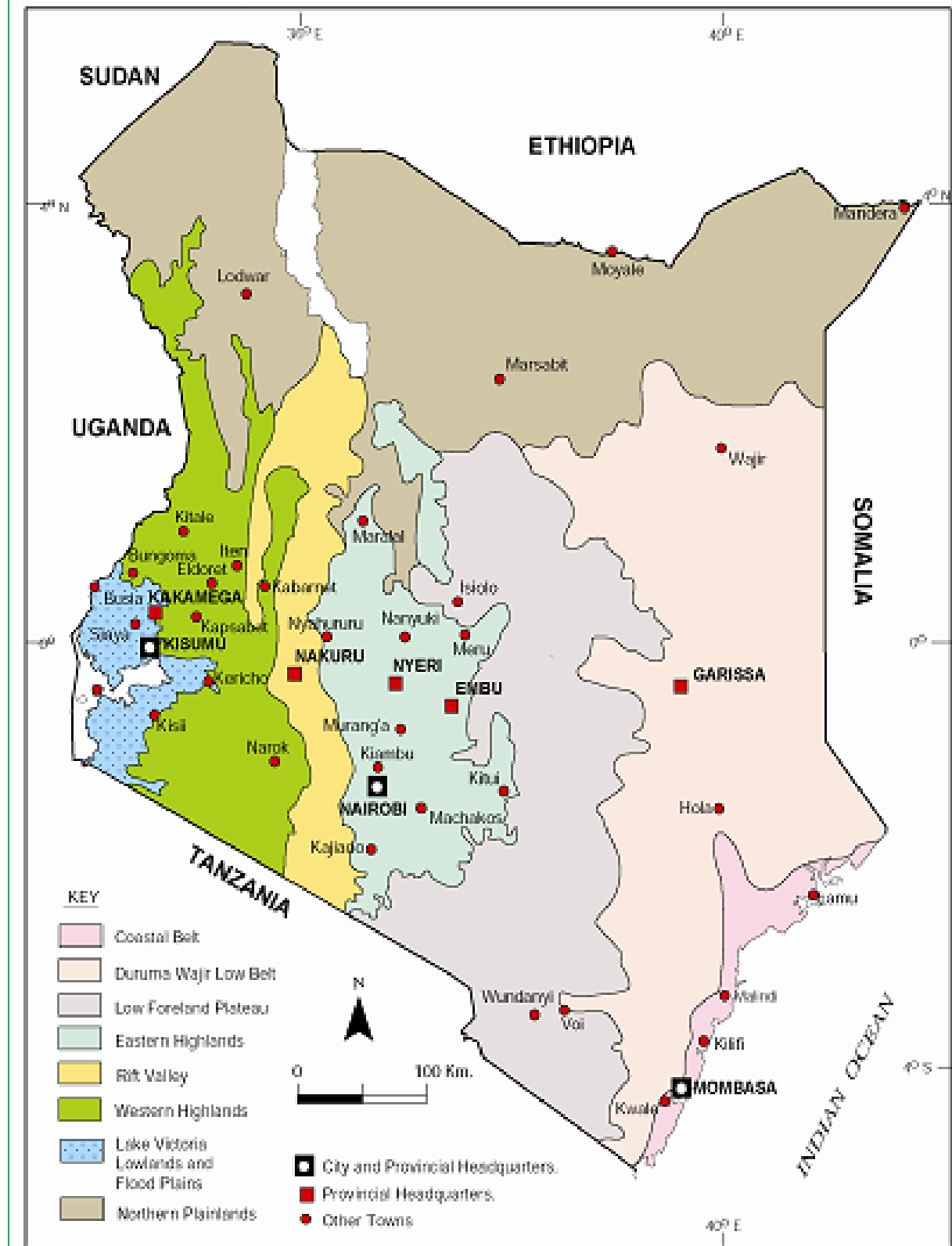


Figure 10: Physical Regions of Kenya

3.6 Socio-Economic Background

3.6.1 Population

Kenya's population was 10.9 million in 1969, and by 1999 it had almost tripled to 28.7 million (Central Bureau of Statistics, 1994, 2001a). Results of previous censuses indicate that the annual population growth rate was 2.9 percent per year during the 1989-1999 period, down from 3.4 percent reported for the 1979-1989 inter-censal period. Currently, growth is estimated to be about 2.8 percent. The decline in population growth is a realization of the efforts called for by the National Population Policy for Sustainable Development (National Council for Population and Development, 2000) and is a result of the decline in fertility rates over recent decades.

Kenya's population increases by an estimated one million a year. The government revised population based on the 2009 census is 39.8 million, an increase of over 35 percent in the past decade. The population report shows the distribution of the population across the country, with Rift Valley Province being the most populous with 10.1 million people. Nairobi, the capital, has 3.1 million people, according to the report released by the Ministry of Planning and National Development. Demographic trends show that more people are moving to urban areas and the Bank estimates that half of Kenya's population will live in cities by 2050. Better macro-economic conditions in the past decade helped improve the welfare of Kenyans, but the poor remain vulnerability to drought and other crises induced by climate change.

Rural and urban poverty remain a challenge. Recent analysis of the data from the 2005 to 2006 Kenya Integrated Household Budget Survey (KIHBS) indicates that national absolute poverty declined from 52.3 percent in 1997 to 46.1 percent in 2005 to 2006. While this decline in poverty compares well with other Sub Saharan African countries, it can still be considered high in comparison to neighbouring countries such as Tanzania (about 36 percent) and Uganda (about 31 percent). In rural areas, overall poverty declined from 52.9 percent to 49.1 percent, while in urban areas, poverty declined from 49.2 percent in 1997 to 38.8 percent over the same period.

The 2008-2009 Demographic Health Survey (DHS) show that fertility levels have declined from 8.1 births per woman in the late 1970s to the current level of 4.6 births per woman. The decline in fertility levels is expected to be manifested in the age distribution of the country's population. Mortality rates also have risen since the 1980s, presumably due to increased deaths from the HIV/AIDS epidemic, deterioration of health services, and widespread poverty (National Council for Population and Development, 2000). The crude birth rate increased from 50 births per 1,000 population in 1969 to 54 per 1,000 in 1979 but thereafter declined to 48 and 41 per 1,000 in 1989 and 1999, respectively. The crude death rate increased from 11 per 1,000 population in 1979-1989 to 12 per 1,000 for the 1989-1999 period. The infant mortality rate, which had steadily decreased from 119 deaths per 1,000 live births in 1969 to 88 deaths per 1,000 live births in 1979, and then to 66 deaths per 1,000 live births in 1989, increased briefly in 1999 to 77 per 1,000 but then resumed its decline in 2009.

The Kenyan poverty profile also reveals strong regional disparities in the distribution of poverty. According to the 2005 to 2006 survey, the lowest incidence of rural poverty was in Central province (30.3 percent), followed by Nyanza (47.9 percent), Rift Valley (49.7 percent), Eastern (51.1 percent), Western (53.2 percent), Coast (69.7 percent), and North Eastern province (74.0 percent). Inequality in Kenya remains high. The distribution of income, measured by the Gini coefficient (a measure of inequality of income distribution—the higher the percentage the higher the level of inequality) was estimated at 39 percent in rural areas and 49 percent for urban areas (pre-crisis). Income disparities in the rural areas have gone down since 1997, while the disparities in the urban areas have increased slightly. The Commission on Revenue Allocation is using the development and poverty data to develop a model for more equitable distribution of public resources.

There has been additional progress with respect to other dimensions of social development over the past years. For example, net primary education enrolment was only 80 percent in 2003, but has since increased to about 90 percent in 2008 (with an equal enrolment ratio between boys and girls). In 2004, only about 60 percent of primary students completed their education compared with about 80 percent in 2008. The transition from primary to secondary and later to tertiary and university education has also improved in recent years due to increased public and private investment in the education sector.

3.6.2 Economic Growth & Setting

Kenya's economy recorded high growth rates of real Gross Domestic Product (GDP) averaging 6.6% per annum during the immediate post-independence years (1964-1973) and towards the end of that decade. Deceleration of this growth which started in late 1970s, continued until 2002 when the economy registered a record negative growth rate of 0.2%. During the years 1997-2002 economic growth declined steadily with GDP recording an average annual growth rate of only 0.9%, against a population growth rate of 2.9% per annum. The economy has been on a recovery path since 2003 when real GDP grew by only 0.5% to 6.1 % in 2007, giving rise to an annual growth rate of about 4.3% against a population growth rate of about 2.8% per annum.

Among the key factors contributing to the economic decline were poor infrastructure, particularly bad roads, inadequate energy supply, inadequate water supply, a weak institutional framework, weak performance of the major sectors of the economy namely; agricultural and manufacturing sectors, and poor macro-economic management. More recently, about 46.6 % of Kenya's population of 35.5 million people in 2005/061 was estimated to be living below the country's poverty line in both rural and urban areas.

In an environment of global turbulence and domestic shocks, Kenya recorded moderate growth of 4.4 percent in 2011. For the second consecutive year, the economy experienced positive growth across all quarters and sectors, even though agriculture performed poorly. The agriculture sector growth declined from 6.4 percent in 2010, to 1.6 percent in 2011. This is attributed to dry weather conditions in 2011. However, in terms of total value, Kenya's export crops benefited from favorable global prices, which compensated for reduced output and explained the increased export earnings. Growth in the services sector remained robust, at 5.1 percent, though this was at a slower pace than in previous years.

Industry experienced tepid growth in 2011 at 2.8 percent, a significant decline from 5.3 percent in 2010.

Kenya's growth for the last four years has been relatively modest. Since the 2008 crisis, Kenya has been growing at an average of 3.5 percent per year, well below the average for Sub-Saharan Africa (5.5 percent, excluding South Africa) and significantly slower than the East African Community (EAC) countries, some of which are among the fastest growing developing countries in the world. For example, Rwanda grew at 7.9 percent, Uganda 7.2 percent, and Tanzania 6.7 percent during the 2008-2011 period.

Agricultural growth remained modest, due to the dry weather conditions. The 2011 drought was concentrated in Kenya's arid and semi-arid regions, which affected pastoralist's livelihoods, especially livestock, but impacted agricultural production only mildly. The food sub-sector cereal production increased by 5 percent and horticulture production declined, but prices increased thus earnings remained stable in 2011.

The services sector sustained robust performance in 2011. Tourism continued to experience a boost, recording higher tourist arrivals than 2007, which had been a record year. Kenya has been attracting significant numbers of tourists from new markets, with substantial growth from the Middle East (42 percent) as well as Asia (25 percent), compared to 2010. This could be as a result of new flight routes which Kenya Airways has inaugurated to the Far East. The tourism market from Europe recorded relatively lower growth of 11 percent, when compared to previous years and to other markets.

Industrial sector growth remains driven by construction while manufacturing is lagging. The construction sub-sector recorded an impressive 8.1 percent growth in the first half compared to a 2.2 percent growth in the same period in 2010. Manufacturing grew at a modest 3.2 percent, compared to 5.5 percent in the same period last year. The drought impacted hydro power generation and the resulting high cost of energy has adversely affected the industrial sector. The share of hydro power in Kenya's energy supply declined from 57 percent in July 2010, to 43 percent in July 2011. This in turn increased dependence on back-up thermal power generation, which uses expensive imported fuel as its feedstock. Industries that depend on imported raw materials, saw their production costs increase significantly due to high import costs (oil and steel), along with the depreciation of the shilling.

The costs of imported machinery and equipment also increased substantially. The combined effect of these factors has negatively impacted the competitiveness of industry, resulting in a sluggish performance in 2011.

The services sector is holding up, fuelled by continued growth in ICT and a strong performance in tourism. Services grew by 4.3 percent in the first half of 2011, mainly driven by financial intermediation (8.2 percent); hotels and restaurants (6.4 percent), and transport and communication (5.2 percent). Tourist arrivals increased by 13.6 percent in the first half of 2011, compared to 2010 levels. Despite Europe's economic slowdown, 46 percent of arrivals were still from Europe, 25 percent from the rest of Africa, 12 percent

from the Americas, and 10 percent from Asia. However, the emerging security concerns stemming from Kenya's incursion in Somalia will dampen tourist arrivals for the remainder of the year, though the high season is over.

The Information Communication and Technology (ICT) revolution is reaching new milestones and is stimulating growth in other services. The mobile phone revolution has continued, with subscriptions peaking at 25.3 Million at the end of June 2011, which is more than the number of adults in Kenya. Since June 2010, subscriptions increased by more than 25 percent. In the same period, internet users increased by 60 percent, climbing to 12.5 Million.

This indicates that the data revolution is now also in full swing. A key factor in the growth of internet usage is the new affordable tools, including smart phones and social networking applications with both internet and mobile interface that are proving increasingly popular, especially among the urban youth. The sector has also generated additional innovations, including M-banking, linking mobile money with personal bank accounts, M-credit, and M-insurance, which are expanding the reach of financial services to previously unbanked segments of the population

4 DESCRIPTION OF THE ADMINISTRATIVE, POLICY AND REGULATORY FRAMEWORK

This chapter outlines and highlights the relevant institutional and legal as well as policy framework in Kenya which has a direct bearing on the WSCR. The chapter further highlights the World Bank Safeguard Operational Policies applicable to the project including a comparative analysis and gaps existing between the Bank's policies and host country regulations and suggestions on bridging the gaps. Finally, a section on international laws and conventions that bear relevance to the implementation of this project have also been highlighted in this chapter.

4.1 The Legal, Regulatory and Policy Framework

4.1.1 Constitutional provisions

Kenya now has a new Supreme law in form of the New Constitution which was promulgated on the 27th of August 2010 and which takes supremacy over all aspects of life and activity in the New Republic. With regard to environment, Section 42 of the Constitution states as follows:-

Every person has the right to a clean and healthy environment which includes the right -

- a) *To have the environment protected for the benefit of present and future generations through legislative and other measures, particularly those contemplated in Article 69; and*
- b) *To have obligations relating to the environment fulfilled under Article 70*

In Sections 69 and 70, the Constitution has inter alia identified National Obligations in respect of the environment and Enforcement of Environmental Rights respectively as follows:-

Section 69 (1): The State shall—

- a) *Ensure sustainable exploitation, utilization, management and conservation of the environment and natural resources, and ensure the equitable sharing of the accruing benefits;*
- b) *Work to achieve and maintain a tree cover of at least ten per cent of the land area of Kenya;*
- c) *Protect and enhance intellectual property in, and indigenous knowledge of, biodiversity and the genetic resources of the communities;*
- d) *Encourage public participation in the management, protection and conservation of the environment;*
- e) *Protect genetic resources and biological diversity;*
- f) *Establish systems of environmental impact assessment, environmental audit and monitoring of the environment;*
- g) *Eliminate processes and activities that are likely to endanger the environment; and*
- h) *Utilize the environment and natural resources for the benefit of the people of Kenya.*

Section 69 (2) States that;-Every person has a duty to cooperate with State organs and other persons to protect and conserve the environment and ensure ecologically sustainable development and use of natural resources.

Section 70 provides for enforcement of environmental rights thus:

(1) If a person alleges that a right to a clean and healthy environment recognized and protected under Article 42 has been, is being or is likely to be, denied, violated, infringed or threatened, the person may apply to a court for redress in addition to any other legal remedies that are available in respect to the same matter.

(2) On application under clause (1), the court may make any order, or give any directions, it considers appropriate--

- a) To prevent, stop or discontinue any act or omission that is harmful to the environment;*
- b) To compel any public officer to take measures to prevent or discontinue any act or omission that is harmful to the environment; or*
- c) To provide compensation for any victim of a violation of the right to a clean and healthy environment.*

(3) For the purposes of this Article, an applicant does not have to demonstrate that any person has incurred loss or suffered injury.

Essentially, the new Constitution has embraced and provided further anchorage to the spirit and letter of EMCA 1999 whose requirements for environmental protection and management have largely informed Sections 69 through to 71 of this document. In Section 72 however, the new constitution allows for enactment of laws towards enforcement of any new provisions of the Supreme Law.

4.1.2 Vision 2030

The economic, social and political pillars of Kenya Vision 2030 are anchored on macroeconomic stability; continuity in governance reforms; enhanced equity and wealth creation opportunities for the poor; infrastructure; energy; science, technology and innovation (STI); land reform; human resources development; security as well as public sector reforms. The 2030 Vision aspires for a country firmly interconnected through a network of roads, railways, ports, airports, water and sanitation facilities, and telecommunications.

4.1.3 Environment Management and Coordination Act (No. 8 of 1999), EMCA

This is an Act of Parliament providing for the establishment of an appropriate legal and institutional framework for the management of the environment and for matters connected therewith and incidental thereto. This Act is divided into 13 Parts, covering main areas of environmental concern as follows: Preliminary (I); General principles (II); Administration (III); Environmental planning (IV); Protection and Conservation of the Environment (V), Environmental impact assessments (EIA), audits and monitoring (VI); Environmental audit and monitoring (VII); Environmental quality standards (VIII); Environmental Restoration orders, Environmental Easements (IX); Inspection, analysis and records (IX); Inspection Analysis and Records (X); International Treaties, Conventions and Agreements (XI) National Environment Tribunal (XII); Environmental Offences (XIII). The Act provides

for the setting up of the various ESIA Regulations and Guidelines which are discussed below:

Environmental (Impact Assessment and Audit) Regulations 2003

The Environmental (Impact Assessment and Audit) Regulations 2003 state in Regulation 3 that “the Regulations should apply to all policies, plans, programmes, projects and activities specified in Part III and V of the Regulations” basically lists the guidelines of undertaking, submission and approval of the ESIA Reports a key requirement outlined in this ESMF.

Environmental Management and Co-ordination (Waste Management) Regulations 2006

These are described in Legal Notice No. 121 of the Kenya Gazette Supplement No. 69 of September 2006. These Regulations apply to all categories of waste as provided in the Regulations. These include:

- *Industrial wastes;*
- *Hazardous and toxic wastes;*
- *Pesticides and toxic substances;*
- *Biomedical wastes;*
- *Radio-active substances.*

The proposed Project will have to abide by these regulations in dealing with waste management especially the provisions of wastes which may be generated during their construction and operation phases of the sub project investments. Pesticides may also be used under the irrigation related components of certain sub projects and as such the regulations on the disposal of pesticide wastes must be adhered to.

Environmental Management and Coordination, (Water Quality) Regulations 2006

These are described in Legal Notice No. 120 of the Kenya Gazette Supplement No. 68 of September 2006. These Regulations apply to drinking water, water used for agricultural purposes, water used for recreational purposes, water used for fisheries and wildlife and water used for any other purposes. This includes the following:

- *Protection of sources of water for domestic use;*
- *Water for industrial use and effluent discharge;*
- *Water for agricultural use.*

These Regulations outline:

- a) *Quality standards for sources of domestic water;*
- b) *Quality monitoring for sources of domestic water;*
- c) *Standards for effluent discharge into the environment;*
- d) *Monitoring guide for discharge into the environment;*
- e) *Standards for effluent discharge into public sewers;*
- f) *Monitoring for discharge of treated effluent into the environment.*

In fulfilling the requirements of the regulations the project proponent will have to undertake monitoring of both domestic water and wastewater and ensure compliance with the acceptable discharge standards.

Environmental Management and Coordination, Conservation of Biological Diversity (BD) Regulations 2006

These regulations are described in Legal Notice No. 160 of the Kenya Gazette Supplement No. 84 of December 2006. These Regulations apply to conservation of biodiversity which includes Conservation of threatened species, Inventory and monitoring of BD and protection of environmentally significant areas, access to genetic resources, benefit sharing and offences and penalties.

Environmental Management and Coordination (Fossil Fuel Emission Control) Regulations 2006

These regulations are described Legal Notice No. 131 of the Kenya Gazette Supplement no. 74, October 2006 and will apply to all internal combustion engine emission standards, emission inspections, the power of emission inspectors, fuel catalysts, licensing to treat fuel, cost of clearing pollution and partnerships to control fossil fuel emissions used by the Contractor. The fossil fuels considered are petrol, diesel, fuel oils and kerosene.

Environmental Management and Coordination (Wetlands, Riverbanks, Lake Shores and Sea Shore Management) Regulations 2009

These regulations provide for the protection and management of wetlands, riverbanks, lakeshores and sea shore management and detail guidelines on the same.

Environmental Management and Coordination (Noise and Excessive Vibration Pollution) (Control) Regulations, 2009

These regulations prohibit making or causing any loud, unreasonable, unnecessary or unusual noise which annoys, disturbs, injures or endangers the comfort, repose, health or safety of others and the environment. It also prohibits the Contractor from excessive vibrations which annoy, disturb, injure or endanger the comfort, repose, health or safety of others and the environment or excessive vibrations which exceed 0.5 centimetres per second beyond any source property boundary or 30 metres from any moving source. Under the regulation the Contractor will be required to undertake daily monitoring of the noise levels within the Project area during construction period to maintain compliance.

4.1.4 Occupational Health and Safety Act, 2007

This is an Act of Parliament to provide for the safety, health and welfare of workers and all persons lawfully present at workplaces, to provide for the establishment of the National Council for Occupational Safety and Health and for connected purposes. The Act has the following functions among others:

- *Secures safety and health for people legally in all workplaces by minimization of exposure of workers to hazards (gases, fumes & vapours, energies, dangerous machinery/equipment, temperatures, and biological agents) at their workplaces.*
- *Prevents employment of children in workplaces where their safety and health is at risk.*
- *Encourages entrepreneurs to set achievable safety targets for their enterprises.*
- *Promotes reporting of work-place accidents, dangerous occurrences and ill health with a view to finding out their causes and preventing of similar occurrences in future.*
- *Promotes creation of a safety culture at workplaces through education and training in occupational safety and health.*

Failure to comply with the OSHA, 2007 attracts penalties of up to KES 300,000 or 3 months jail term or both or penalties of KES 1,000,000 or 12 months jail term or both for cases where death occurs and is in consequence of the employer. The Occupational Safety and Health Act (OSHA) 2007 repealed the Factories and Other Places of Work Act. Anything done under the provisions of the Factories and Other Places of Work Act including subsidiary legislation issued before the commencement of the OSHA 2007 shall be deemed to have been done under the provisions of this Act.

The Factories and Other Places of Work Act had over the years passed several subsidiary rules and regulations for effective implementation of the Act. All shall, as long as it is not inconsistent with OSHA 2007 remain in force until repealed or revoked by subsidiary legislation under the provisions of OSHA 2007 and shall for all purposes be deemed to have been made under this Act.

These regulations include:

- *The Factories (Cellulose Solutions) Rules 1957;*
- *The Factories (Wood Working Machinery) Rules 1959;*
- *The Factories (Dock) Rules 1962;*
- *The Factories (Eye Protection) Rules 1978;*
- *The Factories (Electric Power) (Special) Rules 1978;*
- *The Factories (Building Operations and Works of Engineering Construction) Rules 1984;*
- *The Factories and Other Places of Work (Health & Safety Committees) Rules 2004;*
- *The Factories and Other Places of Work (Medical Examination) Rules 2005;*
- *The Factories and Other Places of Work (Noise Prevention and Control) Rules 2005;*
- *The Factories and Other Places of Work (Fire Risk Reduction) Rules 2007;*
- *The Factories and Other Places of Work (Hazardous Substances) Rules 2007.*

The scope of OSHA 2007 has been expanded to cover all workplaces including offices, schools, academic institutions and plantations. It establishes codes of practices to be approved and issued by the Director, Directorate of Occupational Health and Safety (DOHS) for practical guidance of the various provisions of the Act.

Other parameters within the Act relevant to the project include:

1. *Duties of employers, owners or occupiers of workplace;*
2. *Establishment of safety and health committees;*
3. *Annual safety and health audit of workplaces;*
4. *Safety and Health obligations for persons who may come to premises for work and are not employees of that particular workplace;*
5. *Reporting of any accident, dangerous occurrence or occupational poisoning caused in the workplace to the area Occupational Health and Safety Office. These incidents should be entered in the General Register. In case of fatal accident information to the area Safety and Health Office should be within 24 hrs. and a written notice to the same within 7 days;*
6. *The duties of manufactures, designers, importers and suppliers to ensure that all articles and substances for use at workplace are safe and will not cause injury to health and the environment;*
7. *Duties of self-employed persons;*
8. *Duties of employed persons;*

9. *Prohibition of interference or misuse of any appliance, convenience or any other facility provided to secure Safety, Health and Welfare at work by any person (occupier, self-employed person or employed);*
10. *The administration of the Act is the responsibility of a Director and other appointed and gazetted officials (Occupational Health and Safety Officers);*
11. *The registration of all workplaces by the Director Directorate of Occupational Health and Safety (DOHS) forming the basis of his work statistics;*
12. *Machinery safety to include:*
 - *Safe use of machinery, plant and equipment;*
 - *Prime makers and transmission machines;*
 - *The maintenance, construction of fencing safeguards;*
 - *The statutory requirements of various machines, plants and equipment (hoists and lifts, chains and ropes, cranes, steam receivers and containers, air receivers, cylinders for compressed liquefied and dissolved gases and refrigeration plants).*
13. *Chemical safety including:*
 - (i) *Handling, transportation and disposal of chemicals and other hazardous substances;*
 - (ii) *Importance of Materials Safety Data Sheets (MSDS);*
 - (iii) *Labelling and marking of chemical substances;*
 - (iv) *Classification of hazardous chemicals and substances;*
 - (v) *Establishment and adoption of exposure limits on hazardous substances in a workplace;*
 - (vi) *Control of air pollution, noise and vibrations;*
 - (vii) *Redeployment on medical advice.*

4.1.5 The Water Act 2002

Water in Kenya is owned by the Government, subject to any right of the user, legally acquired. The control and right to use water is exercised by the Minister administering the Act, and such use can only be acquired under the provisions of the Act. The Minister is also vested with the duty to promote investigations, conserve and properly use water throughout Kenya. Water permits may be acquired for a range of purposes, including the provision and employment of water for the development of power and other uses. The following are the regulations developed under Water Act 2002 relevant to the Project. These regulations will relate to abstraction and use of water from rivers.

The Water Resources Management Rules (2007)

These Rules are described in Legal Notice Number 171 of the Kenya Gazette Supplementary Number 52 of 2007. They apply to all water resources and water bodies in Kenya, including all lakes, water courses, streams and rivers, whether perennial or seasonal, aquifers, and shall include coastal channels leading to territorial waters.

The Water Resources Management Rules empower Water Resources Management Authority (WRMA) to impose management controls on land use falling under riparian land. It also enables any person with a complaint related to any matter covered by these rules to the appropriate office in WRMA as per the Tenth Schedule which provides a format for report on complaints. WRMA is to reply to the complainant with “copies to all other relevant parties within twenty one days of receiving the complaint, starting with what

action is being taken, the position of the Authority on the matter and any recommendation to the complainant.”

The rules also elaborate on the following:

- *Mechanisms for appeal;*
- *Public notification;*
- *Public consultation;*
- *Orders on compliance;*
- *Protection of the integrity of the water resources monitoring network;*
- *Water Resource User Associations;*
- *Water Resource Database;*
- *Approval of activities listed in the fifth schedule of Water Act 2002;*
- *Authorization and permitting;*
- *Wetlands;*
- *Allocation of water for irrigation;*
- *Prior right to water for storage;*
- *Dams;*
- *Groundwater development and its regulation;*
- *Control of water pollution and effluent discharge;*
- *Water works;*
- *Water use charges on permitted water use;*
- *Conservation of riparian land and catchment areas;*
- *Catchment management strategies;*
- *Protected areas and ground water conservation areas;*
- *Establishment and protection of reserve water;*
- *Miscellaneous provisions which include provisions on:*
 - (i) *Qualifications to practice as a water resource professional;*
 - (ii) *Qualifications for a registered contractor;*
 - (iii) *Recognized water quality laboratories;*
 - (iv) *Emergency orders;*
 - (v) *Penalties for offences;*
 - (vi) *Revocation of rules under Cap 372.*

Part IX: Conservation of Riparian and Catchment Areas of the Rules, Section 116(5) states “Unless otherwise determined by a water resources inspector, the riparian land adjacent to the ocean is defined as a minimum of two metres vertical height or thirty metres horizontal distance from the high watermark, whichever is less”.

Section 118 (1) of the Rules state “No person shall undertake the activities listed in the Sixth Schedule on riparian land unless authorised by the Authority in consultation with other relevant stakeholders”.

Part A of the Sixth Schedule: Protection and Conservation of Riparian and Catchment Areas of the Rules provide activities proscribed on riparian land as:

- 1) *Tillage or cultivation;*
- 2) *Clearing of indigenous trees or vegetation;*
- 3) *Building of permanent structures;*
- 4) *Disposal of any form of waste within the riparian land;*
- 5) *Excavation of soil or development of quarries;*

- 6) *Planting of exotic species that may have adverse effect to the water resource;*
- 7) *Or any other activity that in the opinion of the Authority and other relevant stakeholders may degrade the watercourse.*

4.1.6 The Wildlife Conservation and Management Act, Cap 376

The Wildlife (Conservation and Management) Act, Cap 376 of 1976, as amended in 1989, covers matters relating to wildlife in Kenya including protected areas, activities within protected areas, control of hunting, import and export of wildlife, enforcement and administrative functions of wildlife authorities. The 1989 amendment specifically established the Kenya Wildlife Service (KWS) as the parastatal charged with implementation of the provisions of the Act.

The Act specifically provides for the protection and regulation of protected animals, game animals and game birds as defined in three schedules. The first schedule includes game animals mostly mammals, although the list also includes crocodile and ostrich. The second schedule lists game birds, and the third schedule lists protected animals, which comprise primarily mammals, although it also includes two species of marine turtles, while in 1981 it was amended to include several species of reptiles, amphibians and butterflies. Apart from the protection provided to plants within National Parks and National Reserves, plants receive no further protection under this Act outside the protected areas.

Specific provisions of the Act allow for the establishment of National Parks (Section 6), National Reserves (Section 18), and local sanctuaries (Section 19). The National Parks are managed by KWS. Strict regulations prohibit various activities within National Parks, unless they are subject to the written consent of the Minister or, in other cases, the Director of KWS. No such prohibitions are specified for National Reserves or for local sanctuaries. Areas that were formerly game reserves but are declared as National Reserves continue to be administered by the local authorities, unless otherwise directed by the Minister by notice in the Kenya Gazette

4.1.7 Public Health Act Cap 242

The Public Health Act provides for the protection of human health through prevention and guarding against introduction of infectious diseases into Kenya from outside, to promote public health and the prevention, limitation or suppression of infectious, communicable or preventable diseases within Kenya, to advice and direct local authorities in regard to matters affecting the public health to promote or carry out researches and investigations in connection with the prevention or treatment of human diseases. This Act provides the impetus for a healthy environment and gives regulations to waste management, pollution and human health.

The Public Health Act regulates activities detrimental to human health. The owner(s) of the premises responsible for environmental nuisances such as noise and emissions, at levels that can affect human health, are liable to prosecution under this act. An environmental nuisance is defined in the act as one that causes danger, discomfort or annoyance to the local inhabitants or which is hazardous to human health. This Act controls the activities

of the project with regard to human health and ensures that the health of the surrounding community is not jeopardized by the activities of the project such as water development.

4.1.8 Physical Planning Act

This Act provides for the preparation and implementation of physical development plans for connected purposes. It establishes the responsibility for the physical planning at various levels of Government in order to remove uncertainty regarding the responsibility for regional planning. A key provision of the Act is the requirement for Environmental Impact Assessment (ESIA). This legislation is relevant to the implementation and siting of sewerage plants in pilot urban centres as identified in the project document.

It provides for a hierarchy of plans in which guidelines are laid down for the future physical development of areas referred to in a specific plan. The intention is that the three-tier order plans, the national development plan, regional development plan, and the local physical development plan should concentrate on broad policy issues.

The Act calls for public participation in the preparation of plans and requires that in preparation of plans proper consideration be given to the potential for socio-economic development needs of the population, the existing planning and future transport needs, the physical factors which may influence orderly development in general and urbanization in particular, and the possible influence of future development upon natural environment.

4.1.9 The Forest Act No 7, 2005

The Forest Act, Cap 385 of 1962 (revised 1982, 1992 and 2005) addresses the reservation, protection, management, enforcement and utilisation of forests and forest resources on Government land. The Forest Act is applicable to gazetted forest areas (Forest Reserves) and specifically covers:

- *Gazettement, alteration of boundaries and de-gazettement of Forest Reserves (Section 4);*
- *Declaration of Nature Reserves within Forest Reserves and regulation of activities within Nature Reserves (Section 5);*
- *Issuance of licenses for activities within Forest Reserves (Section 7);*
- *Prohibition of activities in Forest Reserves (removal of forest produce, grazing, cultivation, hunting, etc.) and on un-alienated Government land (removal of trees, collection of honey, lighting of fires) except under license from the Director of Forest Services (Section 8);*
- *Enforcement of the provisions of the Act, penalties and powers afforded to enforcing officers (Sections 9-14);*
- *Power of the Minister to make rules with respect to sale and disposal of forest products, use and occupation of land, licensing and entry into forests (Section 15). This prerogative has been taken with the Forests (General) Rules, which sets forth rules for sale of forest produce and specifies royalty rates for these products.*

Section 4 of the Forest Act relates to excision and addition to the Government forest estate. Section 4 (2) states that declaration or alteration of forest boundaries, or cessation of a forest area may not take place unless twenty-eight days' notice of the intention to make the declaration is published by the Minister in the Kenya Gazette. Implementation of changes

in forest areas can be affected by Legal Notices (published in the Kenya Gazette Supplement) once the formalities of 28 days' notice are complete.

4.1.10 The Land Act 2012)

It is very explicit in the Land Act, 2012, Section 107, that whenever the national or county government is satisfied that it may be necessary to acquire some particular land under section 110 of Land Act 2012, the possession of the land must be necessary for public purpose or public interest, such as, in the interests of public defence, public safety, public order, public morality, public health, urban and planning, or the development or utilization of any property in such manner as to promote the public benefit; and the necessity therefore is such as to afford reasonable justification for the causing of any hardship that may result to any person having right over the property, and so certifies in writing, possession of such land may be taken.

4.1.11 The Trust Land Act (CAP 288)

The constitution vests all land which is not registered under any act of parliament under the ownership of local authorities as trust land. Section 117 of the Constitution of Kenya provides that the Trust Lands Act may empower a county council to set apart an area of trust land vested in that county council for use and occupation by a public body or authority for public purposes, or by any person for a purpose likely to benefit the persons. The Act state that while giving due considerations to the rights and obligations of landowners, there shall be compensation whenever a materials site, diversion or realignment results into relocation of settlement or any change of user whatsoever of privately owned land parcels;

4.1.12 Antiquities and Monuments Act, Cap 215 of 1983

This Act aims to preserve Kenya's national heritage. Section-2 defines an antiquity as any moveable object other than a book or document made or imported into Kenya before 1895. Human, faunal or floral remains in Kenya dating to before the benchmark date of 1895 are also deemed to be antiquities. Both the National Museums of Kenya and the Kenya Cultural Centre have been established in part to discharge this Act.

4.1.13 The Lakes and Rivers Act Chapter 409 Laws of Kenya

This Act provides for protection of river, lakes and associated flora and fauna. The provisions of this Act may be applied in the management of the project.

4.1.14 The Employment Act, 2007

This Act declares and defines the fundamental rights of employees; minimum terms and conditions of employment; to provide basic conditions of employment of employees; and to regulate the employment of children, among other rights. Key sections of the Act elaborate on the employment relationship; protection of wages; rights and duties in employment; termination and dismissal and protection of children, among others. This Act will guide the management of workers, especially during the construction period.

While the EMCA supersedes all other environmental legislation, numerous other laws and regulations in addition to those described above influence the various aspects and activities of the Project, which include the following among others:

- i) Trade Licence Act, Cap 497;*

- ii) *Penal Code Cap 63 (rev. 1985);*
- iii) *Standards Act, Chapter 496 (1974);*
- iv) *Building Code (1968);*
- v) *Work Injury and Benefits Act (2007);*
- vi) *Food, Drugs and Chemical Substances Act, Cap 254 (rev 1992);*
- vii) *Use of Poisonous Substances Act, Cap 247(rev. 1983);*
- viii) *Transport Licensing Board Act (Cap. 404).*

4.2 Relevant Sector Policies and Reforms

4.2.1 National Policy on Environment and Development Sessional Paper No. 6 of 1999

Currently, a far-reaching initiative towards an elaborate national environmental policy is contained in the Sessional Paper No. 6 of 1999 on Environment and Development. It advocates for the integration of environmental concerns into the national planning and management processes and provides guidelines for environmental sustainable development. The challenge of the document and guidelines is to critically link the implementation framework with statutory bodies namely, the National Environmental Management Authority (NEMA), Kenya Wildlife Service (KWS), Kenya Forestry Service (KFS); the Public Complaints Committee (PCC) and the National Environmental Tribunal (NET).

4.2.2 The National Environmental Sanitation and Hygiene Policy-July 2007

The National Environmental Sanitation and Hygiene Policy is devoted to environmental sanitation and hygiene in Kenya as a major contribution to the dignity, health, welfare, social well-being and prosperity of all Kenyan residents. The policy recognizes that healthy and hygienic behaviour and practices begin with the individual. The implementation of the policy will greatly increase the demand for sanitation, hygiene, food safety, improved housing, use of safe drinking water, waste management, and vector control at the household level, and encourage communities to take responsibility for improving the sanitary conditions of their immediate environment.

4.2.3 Forest Policy 2005

The goal of this Policy is to: enhance the contribution of the forest sector in the provision of economic, social and environmental goods and services. The specific objectives of this policy are to:

- *Contribute to poverty reduction, employment creation and improvement of livelihoods through sustainable use, conservation and management of forests and trees.*
- *Contribute to sustainable land use through soil, water and biodiversity conservation, and tree planting through the sustainable management of forests and trees.*
- *Promote the participation of the private sector, communities and other stakeholders in forest management to conserve water catchment areas, create employment, reduce poverty and ensure the sustainability of the forest sector.*
- *Promote farm forestry to produce timber, wood fuel and other forest products.*
- *Promote dry land forestry to produce wood fuel and to supply wood and non-wood forest products.*
- *Promote forest extension to enable farmers and other forest stakeholders to benefit from forest management approaches and technologies.*
- *Promote forest research, training and education to ensure a vibrant forest sector.*

4.2.4 Fisheries Policy

The overall objective of this policy is to: “Create an enabling environment for a vibrant fishing industry based on sustainable resource exploitation providing optimal and sustainable benefits, alleviating poverty, and creating wealth, taking into consideration gender equity.” The specific objectives of this policy are to:

- 1. Promote responsible and sustainable utilization of fishery resources taking into account environmental concerns;*
- 2. Promote development of responsible and sustainable aquaculture, recreational and ornamental fisheries;*
- 3. Ensure that Kenya has a fair access to, and benefit from, the country’s shared fishery resources;*
- 4. Promote responsible fish handling and preservation measures and technologies to minimize post-harvest losses;*
- 5. Encourage value addition, marketing and fair trade in Kenya’s fishery products worldwide;*
- 6. Encourage efficient and sustainable investment in the Kenya fishery sector;*
- 7. Promote active involvement of fisher communities in fisheries management;*
- 8. Integrate gender issues in fisheries development;*
- 9. Promote fish consumption in the country*

4.2.5 Wildlife Policy 2007

The goal of this Policy is to provide a framework for conserving, in perpetuity, Kenya’s rich diversity of species, habitats and ecosystems for the wellbeing of its people and the global community. The objectives and priorities are to:

- Conserve Kenya’s wildlife resources as a national heritage.*
- Provide legal and institutional framework for wildlife conservation and management throughout the country.*
- Conserve and maintain viable and representative wildlife populations in Kenya.*
- Develop protocols methodologies and tools for effective assessment and monitoring of wildlife conservation and management throughout the country.*
- Promote partnerships, incentives and benefit sharing to enhance wildlife conservation and management.*
- Promote positive attitudes towards wildlife and wildlife conservation and management.*

4.2.6 Wetland Policy 2008 Draft

The development of this Policy is in cognizance of the importance of wetlands nationally and Kenya’s obligation under the Ramsar Convention. The policy takes into consideration the broader national environmental frameworks, particularly the Environment Management and Coordination Act (EMCA) 1999, the country’s premier framework environmental law, the Water Act 2002, the Water Policy and the Forest Policy 2007.

The policy spells out clearly eight objectives to achieve its aim. These are;

- 1. Establish an effective and efficient institutional and legal framework for integrated management and wise use of wetlands, which will provide an enabling environment for the participation of all stakeholders.*
- 2. Enhance and maintain functions and values derived from wetlands protect biological diversity and improve essential processes and life-support systems of wetlands.*
- 3. Promote communication, education and public awareness among stakeholders to enhance their participation in wetland conservation.*

4. *Carry out demand driven research and monitoring on wetlands to improve scientific information and knowledge base.*
5. *Enhance capacity building within relevant institutions and for personnel involved in conservation and management of wetlands.*
6. *Establish a national wetlands information management system and database including tools and packages to targeted groups.*
7. *Promote innovative planning and integrated management approaches towards wetlands conservation and management in Kenya*
8. *Promote partnership and cooperation at regional and international levels for the management of transboundary wetlands and migratory species*

4.3 Water Sector Reforms

Kenya's water sector reforms are intended to formalise service provision to all citizens and fulfil their human right to water and sanitation. Discrimination of the urban poor should end, and they should enjoy the same benefits of service provision as people in the middle and high income brackets. A financing mechanism has been established to extend services to poor, under-served areas. This is the Water Services Trust Fund (WSTF), which promotes the scaling up of low-cost technology for the provision of clean water and basic sanitation. Another new body, the Water Resources Management Authority (WRMA), is now implementing a catchment management approach. With the active participation of the water users, this will increase water availability, while reducing water conflicts and the pollution of water resources.

In 2006, a sector-wide approach was started, involving joint financing with other donors, all of whom participate in conferences and the annual joint sector reviews. There are also regular meetings with donors and civil society representatives at which the ministry and water sector institutions report on their performance.

Results achieved so far

The MEWNR has set up a new policy framework consisting of the Water Sector Strategic Plan, as well as national strategies for water supply, sanitation and integrated water resources management.

Conflicts over water have declined in sub-catchment areas thanks to the work of water resource users associations, as well as wetland protection activities and the issuing of water permits to control over-extraction. Water polluters are now identified and dealt with. Participatory catchment planning has been introduced and is now the standard in Kenya.

The Water Services Trust Fund (WSTF) has begun to scale up the provision of water and sanitation services. It now aims to help the water services providers reach around 400,000 additional people every year.

The Water Services Regulatory Board (WASREB) has put in place an information system and now publishes an annual performance report – the Impact Report – on water and sanitation. For the first time in Kenya, this provides a national overview of the current situation, thus exerting pressure on water service providers constantly to improve their

performance. All the major performance indicators for providers have shown steady improvement since the reform.

The Water Resources Management Authority (WRMA) now publishes an annual report on the status of the country's water resources. This should help increase public awareness and safeguard the environment for future generations.

4.4 Relevant Institutions-Environmental

4.4.1 Environmental Assessment Administrative/Institutional framework

There are over 20 institutions and departments, which deal with environmental issues in Kenya. Some of the key institutions include the Ministry of Environment and Mineral Resources (MEMR), Kenya Forest Services (KFS), Kenya Wildlife Service (KWS), National Museums of Kenya (NMK), National Environment Management Authority (NEMA), Ministry of Environment, Water and Natural Resources (MEWNR), Water Resources Management Authority (WRMA) and the public universities, among other organisations. There are also local and international NGOs involved in environmental issues in Kenya. In 2001, the Government established specific administrative structures to implement the EMCA. The main administrative structures are described in the following sections.

The National Environment Council

The National Environmental Council (the Council) is responsible for policy formulation and directions for the purposes of the Act. The Council also sets national goals and objectives, and determines policies and priorities for the protection of the environment.

The National Environment Management Authority

The responsibility of the National Environmental Management Authority (NEMA) is to exercise general supervision and co-ordination over all matters relating to the environment and to be the principal instrument of Government in the implementation of all policies relating to the environment.

In addition to NEMA, the Act provides for the establishment and enforcement of environmental quality standards to be set by a technical committee of NEMA known as the Standards and Enforcement Review Committee (SERC) which will govern the discharge limits to the environment by the proposed project.

Provincial and District Environmental Committees

The Provincial and District Environmental Committees also contribute to decentralised environmental management and enable the participation of local communities. These environmental committees consist of the following:

- i) Representatives from all the ministries;*
- ii) Representatives from local authorities within the province/district;*
- iii) Two farmers / pastoral representatives;*
- iv) Two representatives from NGOs involved in environmental management in the province/district;*
- v) A representative of each regional development authority in the province/district.*

Public Complaints Committee on Environment

The Public Complaints Committee is established under Section 31 of EMCA. The PCC is concerned with the investigation of complaints relating to environmental damage and degradation generally. The PCC has powers to investigate complaints against any person or even against NEMA or on its own motion investigate any suspected case of environmental degradation. The PCC is required by law to submit reports of its findings and recommendations to NEC. The law however is weak in that it does not provide PCC with the mandate to see its recommendations carried through. Further, NEC is not specifically required to do anything with regard to the reports submitted by the PCC and will often note and adopt the same without any further follow up action. So far the PCC has experienced challenges such as failure to honour summons, hostility between parties, hostility directed at PCC investigators, lack of understanding of EMCA and abdication of duty by Lead Agencies.

Standards and Enforcement Review Committee

The Standards and Enforcement Review Committee (SERC) is a committee of NEMA and is established under Section 70 of EMCA. This is a technical Committee responsible for formulation of environmental standards, methods of analysis, inspection, monitoring and technical advice on necessary mitigation measures. The Permanent Secretary under the Minister is the Chairman of the Standard and Enforcement Review Committee.

The members of the SERC are set out in the third schedule to EMCA. They consist of representatives of various relevant government ministries and parastatals that are Lead Agencies as well as those responsible for matters such as economic planning and national development, finance, labour, public works, law and law enforcement, etc. Other members are drawn from public universities, and other government institutions.

National Environmental Tribunal (NET)

The NET is established under Section 125 of EMCA for the purpose of hearing appeals from administrative decisions by organs responsible for enforcement of environmental standards. An appeal may be lodged by a project proponent upon denial of an EIA licence or by a local community upon the grant of an EIA licence to a project proponent. NEMA may also refer any matter that involves a point of law or is of unusual importance or complexity to NET for direction. The proceedings of NET are not as stringent as those in a court of law and NET shall not be bound by the rules of evidence as set out in the Evidence Act. Upon the making of an award, NET's mandate ends there as it does not have

the power to enforce its awards. EMCA provides that any person aggrieved by a decision or award of NET may within 30 days appeal to the High Court.

Land and Environment Court

The new constitutional dispensation has provided for the creation of land and environment courts for specific handling of land and environmental related disputes and grievances.

4.5 Autonomous and Semi-Autonomous Government Agencies (SAGAs) Related to the WSCR

4.5.1 Water Sub-Sector

Water Resources Management Authority (WRMA)

The Water Resources Management Authority (WRMA) was formed as one of the water sector bodies under the water sector reforms; the body was established under the Water Act 2002. The overall mandate of WRMA is to protect and conserve water resources. Water resources for purposes of the Water Act include lakes, ponds, swamps, streams, marshes, watercourses or anybody of flowing or standing water both below and above the ground.

The functions of the WRMA include planning, management, protection and conservation of water resources. The WRMA is also authorized to receive and determine applications for water permits and monitor their compliance. There are currently six established regional offices in Kenya these are Athi catchment area in Machakos, Tana catchment area in Embu, Rift Valley catchment area in Nakuru, Lake Victoria South catchment area in Kisumu, Lake Victoria North catchment area in Kakamega and Ewaso Nyiro North catchment area in Nanyuki. The WRMA responsibilities extend to the management of water catchments. The Water Act establishes the Catchment Area Advisory Committees whose principal functions are to advise the WRMA on water resources conservation, use and apportionment at the catchment levels.

Water Services Regulatory Board (WASREB)

The Water Services Regulatory Board is established under the Water Act and was operationalised in March 2003. The functions of the WASREB include the issuance of licences to Water Service Boards and to approve service provision agreements concluded between Water Service Boards and Water Service Providers. The Water Service Providers are the agencies that directly provide water and sanitation services to consumers. The WASREB is responsible for ensuring that water services and supply are efficient and meet expectations of consumers through regulation and monitoring of Water Service Boards and Water Service Providers. To standardize service provision, the Board has the responsibility of developing among others, tariff guidelines.

The Board is therefore supposed to oversee the implementation of policies and strategies relating to provision of water and sanitation services, these policies include the National Water Services Strategy (2007 -2015), Pro-Poor Implementation Plan for Water Supply and Sanitation. The specific functions of the WASREB include:

- Providing information about water and sanitation services.

- Regulating the provision of water and sanitation services; this is done through such methods as setting standards for the provision of water services, monitor compliance of facilities for water supply with the set standards.
- Licensing Water Service Boards such as the Athi Water Services Board and other regional water service boards and approving their appointed Water Service Providers through service provision agreements.
- Setting the rules, establishing standards guidelines and monitoring the performance of Water Service Boards and Water Service Providers and enforcing regulations.
- Establishing technical, water quality and effluent disposal standards.

Water Services Trust Fund (WSTF)

The Government of Kenya, through the Ministry of Water and Irrigation (now the Ministry of Water, Environment and Natural Resources) established the Water Services Trust Fund (WSTF) under the Water Act 2002 to channel funding for its long-term objectives of developing water and sanitation services in areas of Kenya without adequate water. The main objective of the WSTF is to assist in financing capital costs of providing services to communities without adequate water and sanitation services. The WSTF focuses on reaching those areas that are underserved or not served at all such as informal settlements, the priority being given to poor and disadvantaged groups. The projects are funded through direct allocation by the Government and donations and grants that may be received from bilateral and multilateral development partners, organisations and individuals.

Water Appeals Board

The Water Appeals Board is established under the Water Act to adjudicate disputes within the water sector. The Appeals Board is made up of three persons, one appointed by the President on advice of the Chief Justice and two others appointed by the Minister for Water and Irrigation. The Water Appeals Board can hear and determine appeals arising from the decision of the Minister of Water and Irrigation, the WASREB and the Water Resources Management Authority (WRMA) with respect to the issuance of permits or licenses under the Water Act.

Water Services Boards (WSB)

Water Services Boards (WSBs) are constituted under the Water Act 2002. The WSBs are responsible for the provision of water and sewerage services within their areas of coverage and are licensed by the WASREB. The WSBs are also responsible for contracting Water Services Providers (WSPs) for the provision of water services. WSB and WSP enter into service provision agreements that include but not limited to the supply area, development, rehabilitation and maintenance of water and sewerage facilities of the WSBs. The WSBs are responsible for the review of the water services tariffs proposals from WSP before submission to WASREB for consideration. There are currently eight (8) established WSBs namely: Athi Water Services Board, Tana Water Services Board, Coast Water Services Board, Lake Victoria South Water Services Board, Lake Victoria North Water Services Board, Northern Water Services Board, Rift Valley Water Services Board and Tanathi Water Services Board.

4.6 International Environmental and Social Management Requirements

Kenya is a signatory to several international treaties and conventions that are relevant to the sectors that the proposed sub projects under the WSCR. The conventions include among others;-

- 1. United Nations Framework Convention on Climate Change*
- 2. United Nations Convention on Biological Diversity*
- 3. United Nations Convention on Combating Desertification*
- 4. Convention on the Conservation of Migratory Species (CMS)*
- 5. Africa Convention on Conservation of Nature and Natural Resources*
- 6. International Convention for the Prevention of Pollution from Ships*
- 7. Convention on International Trade in Endangered Species of Wild Fauna and Flora*

5 DESCRIPTION OF WORLD BANK ENVIRONMENTAL & SOCIAL SAFEGUARDS POLICIES AND TRIGGERS

Table 3 below shows the Banks safeguards policies in general and table 3 highlights the specific safeguards that are triggered as a result of the proposed WSCRIP investments.

Table 3: Summary of World Bank’s Safeguards Policies objectives including when they are triggered

Policy	Objective	Trigger for the Policy
OP/BP 4.01 Environmental Assessment	The objective of this policy is to ensure that Bank-financed projects are environmentally sound and sustainable, and that decision-making is improved through appropriate analysis of actions and of their likely environmental impacts. This policy is triggered if a project is likely to have potential (adverse) environmental risks and impacts on its area of influence. OP 4.01 covers impacts on the natural environment (air, water and land); human health and safety; physical cultural resources; and transboundary and global environment concerns.	Depending on the project, and nature of impacts a range of instruments can be used: EIA, environmental audit, hazard or risk assessment and environmental management plan (EMP).When a project is likely to have sectoral or regional impacts, sectoral or regional EA is required. The Borrower is responsible for carrying out the ESIA.
OP/BP 4.04 Natural Habitats	This policy recognizes that the conservation of natural habitats is essential to safeguard their unique biodiversity and to maintain environmental services and products for human society and for long-term sustainable development. The Bank therefore supports the protection, management, and restoration of natural habitats in its project financing, as well as policy dialogue and economic and sector work. The Bank supports, and expects borrowers to apply, a precautionary approach to natural resource management to ensure opportunities for environmentally sustainable development. Natural habitats are land and water areas where most of the original native plant and animal species are still present. Natural habitats comprise many types of terrestrial, freshwater, coastal, and marine ecosystems. They include areas lightly modified by human activities, but retaining their ecological functions and most native species. This bank policy prohibits financing for developments that would significantly convert or degrade critical natural habitats, and preference is on siting projects on already converted land.	This policy is triggered by any project (including any sub-project under a sector investment or financial intermediary) with the potential to cause significant conversion (loss) or degradation of natural habitats, whether directly (through construction) or indirectly (through human activities induced by the project).
OP/BP 4.36 Forests	The objective of this policy is to assist borrowers to harness the potential of forests to reduce poverty in a sustainable manner, integrate forests effectively into sustainable economic development and protect the vital local and global environmental services and values of forests. Where forest restoration and plantation development are necessary to meet these objectives, the Bank assists borrowers with forest restoration activities that maintain or enhance biodiversity and ecosystem functionality. The Bank assists borrowers with the establishment of environmentally appropriate, socially beneficial and economically viable forest plantations to	This policy is triggered whenever any Bank-financed investment project (i) has the potential to have impacts on the health and quality of forests or the rights and welfare of people and their level of dependence upon or interaction with forests; or (ii) aims to bring about changes in the management, protection or utilization of natural forests or plantations.

Policy	Objective	Trigger for the Policy
OP 4.09 Pest Management	<p>help meet growing demands for forest goods and services.</p> <p>The objective of this policy is to (i) promote the use of biological or environmental control and reduce reliance on synthetic chemical pesticides; and (ii) strengthen the capacity of the country's regulatory framework and institutions to promote and support safe, effective and environmentally sound pest management. More specifically, the policy aims to (a) Ascertain that pest management activities in Bank-financed operations are based on integrated approaches and seek to reduce reliance on synthetic chemical pesticides (Integrated Pest Management (IPM) in agricultural projects and Integrated Vector Management (IVM) in public health projects. (b) Ensure that health and environmental hazards associated with pest management, especially the use of pesticides are minimized and can be properly managed by the user. (c) As necessary, support policy reform and institutional capacity development to (i) enhance implementation of IPM-based pest management and (ii) regulate and monitor the distribution and use of pesticides.</p> <p>Pesticides in WHO Classes IA and IB may not be procured for Bank supported projects.</p>	<p>The policy is triggered if : (i) procurement of pesticides or pesticide application equipment is envisaged (either directly through the project, or indirectly through on-lending, co-financing, or government counterpart funding); (ii) the project may affect pest management in a way that harm could be done, even though the project is not envisaged to procure pesticides. This includes projects that may (i) lead to substantially increased pesticide use and subsequent increase in health and environmental risk; (ii) maintain or expand present pest management practices that are unsustainable, not based on an IPM approach, and/or pose significant health or environmental risks.</p>
OP/BP 4.11 Physical Cultural Resources	<p>The objective of this policy is to assist countries to avoid or mitigate adverse impacts of development projects on physical cultural resources. For purposes of this policy, "physical cultural resources" are defined as movable or immovable objects, sites, structures, groups of structures, natural features and landscapes that have archaeological, paleontological, historical, architectural, religious, aesthetic, or other cultural significance. Physical cultural resources may be located in urban or rural settings, and may be above ground, underground, or underwater. The cultural interest may be at the local, provincial or national level, or within the international community.</p>	<p>This policy applies to all projects requiring a Category A or B Environmental Assessment under OP 4.01, project located in, or in the vicinity of, recognized cultural heritage sites, and projects designed to support the management or conservation of physical cultural resources.</p>
OP/BP 4.10 Indigenous Peoples	<p>The objective of this policy is to (i) ensure that the development process fosters full respect for the dignity, human rights, and cultural uniqueness of indigenous peoples; (ii) ensure that adverse effects during the development process are avoided, or if not feasible, ensure that these are minimized, mitigated or compensated; and (iii) ensure that indigenous peoples receive culturally appropriate and gender and inter-generationally inclusive social and economic benefits.</p> <p>The policy requires free, prior and informed consultation with indigenous peoples.</p>	<p>The policy is triggered when the project affects the indigenous peoples (with characteristics described in OP 4.10 para 4) in the project area.</p>
OP/BP 4.12 Involuntary Resettlement	<p>The objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; (iii) encourage community participation in planning and implementing resettlement; and (iv) provide assistance to affected people regardless of the legality of land tenure.</p>	<p>This policy covers not only physical relocation, but any loss of land or other assets resulting in: (i) relocation or loss of shelter; (ii) loss of assets or access to assets; (iii) loss of income sources or means of livelihood, whether or not the affected people must move to another location.</p>

Policy	Objective	Trigger for the Policy
OP/BP 4.37 Safety of Dams	The objectives of this policy are as follows: For new dams, to ensure that experienced and competent professionals design and supervise construction; the borrower adopts and implements dam safety measures for the dam and associated works. For existing dams, to ensure that any dam that can influence the performance of the project is identified, a dam safety assessment is carried out, and necessary additional dam safety measures and remedial work are implemented.	<p>This policy also applies to the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.</p> <p>This policy is triggered when the Bank finances: (i) a project involving construction of a large dam (15 m or higher) or a high hazard dam; and (ii) a project which is dependent on an existing dam. For small dams, generic dam safety measures designed by qualified engineers are usually adequate.</p> <p>Dams with ≥ 15m in height review by an independent dam safety panel is required.</p>
OP 7.50 Projects in International Waters	<p>The objective of this policy is to ensure that Bank-financed projects affecting international waterways would not affect: (i) relations between the Bank and its borrowers and between states (whether members of the Bank or not); and (ii) the efficient utilization and protection of international waterways.</p> <p>The policy applies to the following types of projects: (a) Hydroelectric, irrigation, flood control, navigation, drainage, water and sewerage, industrial and similar projects that involve the use or potential pollution of international waterways; and (b) Detailed design and engineering studies of projects under (a) above, include those carried out by the Bank as executing agency or in any other capacity.</p>	This policy is triggered if (a) any river, canal, lake or similar body of water that forms a boundary between, or any river or body of surface water that flows through two or more states, whether Bank members or not; (b) any tributary or other body of surface water that is a component of any waterway described under (a); and (c) any bay, gulf strait, or channel bounded by two or more states, or if within one state recognized as a necessary channel of communication between the open sea and other states, and any river flowing into such waters.
OP 7.60 Projects in Disputed Areas	The objective of this policy is to ensure that projects in disputed areas are dealt with at the earliest possible stage: (a) so as not to affect relations between the Bank and its member countries; (b) so as not to affect relations between the borrower and neighboring countries; and (c) so as not to prejudice the position of either the Bank or the countries concerned.	This policy is triggered if the proposed project will be in a “disputed area”. Questions to be answered include: Is the borrower involved in any disputes over an area with any of its neighbors. Is the project situated in a disputed area? Could any component financed or likely to be financed as part of the project be situated in a disputed area?
The WB Group Environment, Health and Safety Guidelines.	<p>The General EHS Guidelines contain information on cross-cutting environmental, health, and safety issues potentially applicable to all industry sectors. The guidelines include;-</p> <p>Environment</p> <ul style="list-style-type: none"> • Air Emissions and Ambient Air Quality • Energy Conservation • Wastewater and Ambient Water Quality • Water Conservation • Hazardous Materials Management • Waste Management • Noise 	These guidelines will be followed during the preparation of mitigation measures. When host country regulations differ from the levels and measures presented in the EHS Guidelines, projects are expected to achieve whichever is more stringent. If less stringent levels or measures are appropriate in view of specific project circumstances, a full and detailed justification for any proposed alternatives is needed as part of the site-specific

Policy	Objective	Trigger for the Policy
	<ul style="list-style-type: none"> Contaminated Land <u>Occupational Health and Safety Guidelines</u> <u>Community Health and Safety</u> <u>Construction and Decommissioning</u>	environmental assessment. This justification should demonstrate that the choice for any alternate performance levels is protective of human health and the environment.

5.1 World Bank's Safeguards Likely to be Triggered by WSCR

The WSCR is a countrywide program and expected to have project investments in the entire country for as long as the selected sites are feasible in terms of water development. However, the likely or potential locations of many of the proposed investments are unknown at this point in time. The safeguards instruments prepared for any sub project investment will address the requirements of any applicable policies.

Table 4: Safeguard policies likely to be triggered under WSCR

Safeguard Policies Triggered by the Project(For the Moment)	Yes	Reasons For Triggers	No
Environmental Assessment (OP/BP 4.01)	X	Investments are likely to have potential significant adverse environmental impacts	
Natural Habitats (OP/BP 4.04)	X	Investments may be located in or close to areas with natural unique flora and fauna	
Pest Management (OP 4.09)	X	Investments in irrigation for agriculture purposes may employ the use of pesticides or may indirectly result in increased pesticide usage	
Physical Cultural Resources (OP/BP 4.11)	X	Investments will involve construction of mega projects in the water sector and excavation activities can lead to impacts on physical and cultural resources	
Involuntary Resettlement (OP/BP 4.12)	X	Investments may involve land take for construction purposes	
Indigenous Peoples (OP/BP 4.10)	X	Investments may be located in areas with vulnerable and marginalised groups/people	
Forests (OP/BP 4.36)	X	Investments located in or close to areas with natural forests or affect forest catchments	
Safety of Dams (OP/BP 4.37) ³	X	Investments like construction of dams for bulk water supply, irrigating or hydropower raises dam safety concerns	
Projects in Disputed Areas (OP/BP 7.60)*			X
Projects on International Waterways (OP/BP 7.50)	X	Abstraction, diversion of water from targeted water bodies may trigger transboundary issues especially for water bodies that are transboundary in nature.	

³ Note that OP 4.36 and OP 4.37 have not been triggered for WSCR-1.

* By supporting the proposed project, the Bank does not intend to prejudice the final determination of the parties' claims on the disputed areas

		The Bank/MEWNR technical evaluation needs to determine that the project will have no adverse impacts on international waterways. In accordance with OP7.50, the process of notifying the riparian states if any proposed sub project will involve international waterways are completed either directly by MEWNR.	
--	--	---	--

5.1.1 Environmental Assessment (OP4.01)

This policy requires Environmental Assessment (EA) of projects proposed for Bank financing to help ensure that they are environmentally sound and sustainable, and thus to improve decision-making. The EA is a process whose breadth, depth, and type of analysis will depend on the nature, scale, and potential environmental impact of the proposed investments under the WSCR. The EA process takes into account the natural environment (air, water, and land); human health and safety; social aspects (involuntary resettlement, indigenous peoples, and cultural property) and transboundary and global environmental aspects.

The adverse environmental and social impacts under WSCR will come from the proposed investments and associated activities. However, since the exact location of these investments will not be identified before bank appraisal of the project, the Banks’ EA policy calls for the GoK to prepare an Environmental and Social Management Framework (ESMF) in accordance with its’ procedures.

OP4.01 is triggered because the WSCR will finance civil works projects including the rehabilitation and refurbishment of existing infrastructure, as well as the construction of new water related infrastructure. This ESMF establishes a mechanism to determine and assess future potential environmental and social impacts during implementation of WSCR activities, and sets out mitigation, monitoring and institutional measures to be taken during operations of these activities, to eliminate adverse environmental and social impacts, offset them, or reduce them to acceptable levels.

In regard to disclosure of the ESMF report, World Bank requires that the report be disclosed as a separate document as a condition for Bank appraisal. This report will be disclosed to the general public to meet this requirement as well as the Infoshop of the World Bank and the date of disclosure will precede the date for appraisal of the program. The World Bank system assigns a project to one of three project categories, as defined below:

The extent and type of environmental and social assessment required by the World Bank is a function of the project's environmental impact and hence, its environmental screening category. The World Bank undertakes environmental and social screening of each proposed subproject to determine the appropriate extent and type of environmental and social assessment. The World Bank classifies projects into one of three categories (A, B and C), depending on the type, location, sensitivity, and scale of the project and the nature and magnitude of its potential environmental impacts.

Table 5. World Bank EA Screening Categories

Category “A”	An EIA is always required for projects that are in this category. Impacts are expected to be ‘adverse, sensitive, irreversible and diverse with attributes such as pollutant discharges large enough to cause degradation of air, water, or soil; large-scale physical disturbance of the site or surroundings; extraction, consumption or conversion of substantial amounts of forests and other natural resources; measurable modification of hydrological cycles; use of hazardous materials in more than incidental quantities; and involuntary displacement of people and other significant social disturbances.
Category B	When the subproject’s adverse environmental impacts on human populations or environmentally important areas (including wetlands, forests, grasslands, and other natural habitats) are less adverse than those of Category A subprojects. Impacts are site – specific; few, if any, of the impacts are irreversible; and in most cases, mitigation measures can be designed more readily than for Category A subprojects. The scope of environmental assessment for a Category B subproject may vary from sub-project to sub-project, but it is narrower than that of a Category A sub-project. It examines the subproject’s potential negative and positive environmental impacts and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance.
Category C	If the subproject is likely to have minimal or no adverse environmental impacts. Beyond screening, no further environmental assessment action is required for a Category C sub-project.

The WSCRП is rated as Category A. “Category A” project is likely to have significant adverse environmental impacts that are sensitive, diverse, or unprecedented. These impacts may affect an area broader than the sites or facilities subject to physical works. The EA for a Category A project examines the project's potential negative and positive environmental impacts, compares them with those of feasible alternatives (including the "without project" scenario), and recommends any measures needed to prevent, minimize, mitigate, or compensate for adverse impacts and improve environmental performance. For a Category A project, the borrower is responsible for preparing a report, normally an Environmental and Social Impact Assessment (or a suitably comprehensive regional or sectoral EA).

However, sub project investments within the overall WSCRП may be categorised and rated as B or C and not necessarily A for example some small new infrastructure developments and infrastructure rehabilitations which may be rated as B hence requiring stand-alone ESMPs. Investments under component 2 of the WSCRП like hydrologic or meteorological monitoring systems would likely be in Category C, requiring no further environmental study. All projects in this WSCRП will be subjected to mandatory screening to determine whether they require further environmental analysis or otherwise.

5.1.2 Involuntary Resettlement (OP 4.12)

The objective of this policy to avoid where feasible, or minimize, exploring all viable alternative project designs, to avoid resettlement. This policy is triggered in situations involving involuntary taking of land and involuntary restrictions of access to legally designated parks and protected areas. The policy aims to avoid involuntary resettlement to the extent feasible, or to minimize and mitigate its adverse social and economic impacts. This policy covers direct economic and social impacts that both result from Bank-assisted investment projects, and are caused by (a) the involuntary taking of land resulting in (i) relocation or loss of shelter; (ii) loss of assets or access to assets, or (iii) loss of income sources or means of livelihood, whether or not the affected persons must move to another location; or (b) the involuntary restriction of access to legally designated parks and protected areas resulting in adverse impacts on the livelihoods of the displaced persons.

The policy prescribes compensation and other resettlement measures to achieve its objectives and requires that borrowers prepare adequate resettlement planning instruments prior to project appraisal of proposed projects. The main objective of this policy is to (i) avoid or minimize involuntary resettlement where feasible, exploring all viable alternative project designs; and (ii) assist displaced persons in improving their former living standards, income earning capacity, and production levels, or at least in restoring them; and (iv) provide assistance to affected people regardless of the legality of land tenure..

The policy requires the displaced persons and their communities, and any host communities receiving them, are provided timely and relevant information, consulted on resettlement options, and offered opportunities to participate in planning, implementing, and monitoring resettlement; and appropriate and accessible grievance mechanisms are established for these groups. In new resettlement sites or host communities, infrastructure and public services are provided as necessary to improve, restore, or maintain accessibility and levels of service for the displaced persons and host communities.

A Resettlement Policy Framework (RPF) has been prepared that establishes standards and procedures for the preparation of Resettlement Action Plans (RAPs), as required. The RAPs would be prepared by WSCRП and its implementing partners. In this case, the World Bank reserves the right to also approve the individual RAPs as a condition for that particular project investment to be financed. For individual investments/subproject the RAP will be prepared when a project activity, in the cases mentioned above, for example, causes the involuntary taking of land and other assets resulting in:

- 1) *Relocation or loss of shelter,*
- 2) *Loss of assets or access to assets,*
- 3) *Loss of income sources or means of livelihood, whether or not the affected persons must move to another location,*
- 4) *Loss of land,*

A Resettlement Policy Framework has been prepared for the WSCRП principally because the envisaged investments may involve land acquisition and or restriction of access to existing infrastructure. The RPF will guide preparation of Resettlement Action Plans (RAPs), where required.

5.2 Alignment of WB and GOK Polices relevant to this ESMF

Both the World Bank safeguards policies and GoK laws are generally aligned in principle and objective:

- *Both require screening of sub project investments in order to determine if further environmental analysis (ESIAs) is needed.*
- *Both require ESIA before project design and implementation (which also includes an assessment of social impacts).*
- *Both require public disclosure of ESIA reports.*
- *EMCA recognizes other sectoral laws while WB has safeguards for specific interests.*

- *The Bank requires that stakeholder consultations be undertaken during planning, implementation and operation phases of the project which is equivalent to the EMCA requirements.*
- *Additionally, statutory annual environmental audits are required by EMCA.*
- *The national provisions for the management of resettlement related issues are not as fully developed and therefore not at par with the World Bank safeguard policy requirements. Thus, it is expected that the WB OP 4.12 will be mostly applied under the WSCRП Programme and a separate document to guide the process, i.e. a Resettlement Policy Framework (RPF) document will be prepared as a standalone report to support the social management and acceptability of the projects.*

In Kenya, it is a mandatory requirement under EMCA 1999 for all proposed development projects to be preceded by an ESIA study. However, prior to developing an ESIA, a project proponent is required to prepare a project report to aid NEMA in making a determination whether a full scale ESIA is necessary or not. Thus, under the laws of Kenya, environmental assessment is fully mainstreamed in all development process and starts with a screening process which is consistent with World Bank safeguard policies on EA that calls for mandatory screening as well to determine the rating category.

Project reports will be prepared for all the sub project investments under the WSCRП to determine if they require a full scale ESIA. Further, in order to fully insure against triggers to WB safeguard policies, individual investments will be screened against each policy as part of the EA process.

5.3 Requirements for Public Disclosure

Prior to appraisal of the WSCRП, this draft ESMF will be disclosed in country through posting on the Ministry of Environment, Water and Natural Resources (MEWNR) website www.water.go.ke as well as in the Bank's infoshop. If there are any changes, a final version will be disclosed in the same manner and places described later.

6 DETERMINATION OF POTENTIAL ENVIRONMENT AND SOCIAL IMPACTS

This chapter analyses the potential positive (beneficial) and negative (adverse) environmental consequences of the sub project investments envisioned under the WSCR. P.

6.1 Positive Impacts

The water resources development investments supported under the Program could include infrastructure for bulk water supply (including dam and groundwater development) and flood management, upstream activities to ensure the sustainability of investments (e.g., catchment management for selected sites, community outreach, etc.), and enhanced downstream productive water uses to ensure investment performance (e.g., irrigation development, water supply, etc.). Investments would be considered within a catchment based approach and may be accompanied by site-specific measures to increase resilience to natural hazards and allow for adequate disaster preparedness.

6.1.1 *Employment and Improved Service Delivery*

Increased employment opportunities, improved service delivery to enterprises and the population across the water sector in general remains one of the positive benefits that will arise from the WSCR. P. sub projects. Under the Kenya Economic Stimulus Programme, emphasis has been placed on applying human labour in projects in order to provide significant employment opportunities. This project is no different and will therefore provide substantive employment opportunities to local populations. It is anticipated that the project will provide direct employment during the construction phase and another operational stage. Indirect employment through aspects such as transportation, infrastructure maintenance, markets, research and marketing will be far much greater and over a longer period of time.

6.1.2 *Increase Water Supply*

Bulk water supply systems under this program will ensure that the general public in the targeted areas have access to clean water supply a pre-requisite for health and sanitation and a basic right as per the constitution of Kenya including part of the MDGs.

6.1.3 *Increased Food Security*

Kenya is a food insecure country. In order to reverse this situation, more land need to be put into production and more so through irrigation. The project will play an important role on Kenya's food security situation especially where food insecurity is common occurrence.

6.1.4 *Improved economic growth*

Poor water infrastructure has been identified as one of the primary causes of poor economic and employment growth in Kenya. If the WSCR. P. succeeds, the program will translate to overall measurable economic growth for the country.

6.1.5 Flood Control and Water Resources Conservation

Flood control sub project activities will have a direct impact on reducing effects of flood disasters like water and sanitation, displacement etc. Flood control effects of the project will free more land for farming as well as prevent destruction of food crops for those farmers who cultivate floodplains during the dry season. This indirect impact will help achieve food security especially for rain depended crops. This is an immediate impact that will be realized during wet season when floods occur. The WSCRП will invest in infrastructures that will be used by local communities water harnessing and storage.

6.1.6 Environmental Protection

The irrigation related sub projects investments will promotes intensification of agriculture as opposed to extension. This will protect marginal areas as more food will be produced in a smaller area. Sustainable agricultural intensification is not only important to increased employment and income, but also is critical to protecting the environment. The project will reduce the pressure on farmers to push onto more fragile lands or to rely on labour intensive gathering activities off-farm. The project will thus intensify farm production through the use of improved inputs that raise productivity.

6.1.7 Create Birdlife Habitat

The irrigation sub projects, dams and other open bulk water storage infrastructure will attract birdlife in the project area due to availability of food for the birds. This would improve on the general diversity of life in the area but may also threaten the birds should the farmers treat them as pests thus necessary measures should be taken to prevent and endangering of the birdlife through this.

6.1.8 Market Creation

The project will create a market for building and construction materials, farm inputs including seeds, fertilizers, pesticides and herbicides. This is a direct beneficial impact that would be felt during implementation and after the project is operational and crops are harvested from the fields.

6.2 Potential Adverse Impacts

The potential adverse environmental and social impacts of the WSCRП are numerous and this ESMF highlights these impacts which are broad and cross cutting across most of the envisaged investments projects. However, the specific adverse impacts for each investment will be distinguished during the preparation of the specific ESIA or ESMP based on the sub project investment environmental category once the screening process is complete.

6.3 Adverse Environmental Impacts

6.3.1 Loss of vegetation

There will be vegetation loss during the construction phase (for project investments) either to pave way for access roads, actual project construction among others. The vegetation will be cleared so that the area where the construction work is to take place is clear for the construction work to be performed. The construction works will involve direct land take of productive pasture land and agricultural lands, bush clearing, removal of top soil,

excavation and mass haulage. These activities will expose the land to elements of erosion such as wind and water and thus will trigger the process of land degradation.

6.3.2 Change in Hydrology

Abstraction of water for irrigation, bulk water storage, irrigation, hydropower, multipurpose will have impact of the hydrological flow of the riverine system. The impact will affect the general hydrological flows including current existence of water bodies.

6.3.3 Loss of Fauna

Potential investments may generally fragment ecosystems, isolating species population and cutting off migrations and other movement. For example dams will block the upstream and downstream passage of migrating aquatic animals. This will isolate them from vital spawning and feeding areas. Many fish and invertebrates inhabit the river bottom, but these habitats will decline due to depletion of riverbed gravels. Destruction of wild fauna habitat due to construction (on site and along road rehabilitation profile/borrow pit sites).

6.3.4 Soil Erosion/Acidification

Soil erosion could occur during the construction phase when loose soil is swept by waters and during the operational phase especially when irrigation investments are involved. This will be as a result of the intensive activities that will be going on in the construction areas especially land clearing. The heavy equipment and machines that shall be used in the construction process will interfere with the soil structure making it loose hence liable to erosion. Irrigation activities will also cause water logging effects.

6.3.5 Decreased Water Quality

Increase in suspended particles due to construction works; risk of human contamination from construction camps; and competition for water will affect the water quality especially where investment projects are close to natural water bodies. Suspended particles including soil from the neighbouring catchment area will contribute to this. Water quality could deteriorate significantly due to reduced water recharge and balance leading to stagnation contributed by upstream use of fertilizers and pesticides as well especially when investments involved irrigation agriculture. Agrochemical pollution could become a major problem with intensification of monoculture.

A high nutrient level is essential for productive agriculture. However, the use of both natural and chemical fertilizers may result in an excess of nutrients which can cause problems in water bodies and to health. Nitrates are highly soluble and therefore may quickly reach water bodies. Phosphates tend to be fixed to soil particles and therefore reach water courses when soil is eroded.

Infiltration of irrigation water in excess of available root zone storage will penetrate beyond the reach of roots and eventually recharge groundwater. Nitrates, salts, and other chemicals used in crop cultivation that dissolves in the soil water will move with the water. Crops with high water and Nitrates requirements (rice and vegetables) will increase the potential risk of nitrate pollution to groundwater. Because they do not evaporate, nitrates/nitrites are likely to remain in water until consumed by plants or other organisms. This impact will be felt more in areas with light-textured soils and intensive production of shallow-rooted crops

that will contribute to considerable nitrate losses by leaching. This will be an external cost of the project on the population.

Blasting is used to loosen or break up rocks for removal. It is used during excavation of bedrock. Potential environmental impacts include dust (air quality), contaminant spills, sedimentation, safety (workers, storage), fly rock and debris, noise and explosive detonation effects on people and structures.

6.3.6 Downstream Impacts of Dams, Dykes and Weirs

Changes to the low flow regime may have significant negative impacts on downstream users, whether they abstract water (irrigation schemes, drinking supplies) or use the river for transportation or hydropower. Minimum demands from both existing and potential future users need to be clearly identified and assessed in relation to current and future low flows. The quality of low flows is also important. Return flows are likely to have significant quantities of pollutants. Low flows need to be high enough to ensure sufficient dilution of pollutants discharged from irrigation schemes and other sources such as industry and urban areas. A reduction in the natural river flow together with a discharge of lower quality drainage water can have severe negative impacts on downstream users, including irrigation schemes.

Habitats both within and alongside rivers are particularly rich, often supporting a high diversity of species. Large changes to low flows ($\pm 20\%$) will alter micro-habitats of which wetlands are a special case. It is particularly important to identify any endangered species and determine the impact of any changes on their survival. Such species are often endangered because of their restrictive ecological requirements.

The ecology of estuaries is sensitive to the salinity of the water which may be determined by the low flows. Saline intrusion into the estuary will also affect drinking water supplies and fish catches. It may also create breeding places for anopheline vectors of malaria that breed in brackish water.

As a result, in the cumulative impact analysis which would be done for each investment the impact of a given project on those people should be considered. The most important mitigation measures are the release of good quality Reserve Flows capable of maintaining important environmental services, and satisfying downstream water requirements. In addition, the measures taken in the catchment areas in order to improve the longevity as well as the operation of the multipurpose dams and irrigation schemes could affect the livelihoods means of the people living upstream.

A Strategic Environmental Social Assessments (SESA) will be conducted for sub project activities that are within a wider river basin in order to determine the cumulative impacts as is the case with the Lower Nzoia Irrigation Development Project.

6.3.7 Borrow Pits and Quarry Sites

Borrow pits and quarry are sites where stone, sand, gravel, till, clay, or other granular soils are extracted for construction of the various investments within WSCR. The term 'pit' is used when granular material is extracted. The term 'quarry' is used where consolidated

rock is removed. Environmental impacts of pit and quarry development can include the loss, reduction or disturbance to wildlife and habitat, erosion, dust, soil/groundwater contamination, damage to historic resources, waste disposal, noise, and aesthetics.

6.3.8 Impacts on Ecosystems

Potential environmental impacts will result from the creation of the diversion sites and structures themselves, and from operational management of diversion sites and the impacts on downstream riverine ecosystems, including maintenance of in stream and riparian habitats. Downstream impacts on riverine ecosystems are considered above under downstream environmental flows and these are considered to be the primary environmental impacts associated with the development of these water supply abstraction sites. Off-take of water for irrigation will result in reduced stream flows especially during the dry season.

6.3.9 Greenhouse Gas Emission

Greenhouse gas (methane) will be emitted from the irrigation schemes with rice paddies through methanogenesis process from the dams. The cumulative effects of greenhouse gas effect on the climate results in global warming.

6.3.10 Decreased Air Quality

Airborne dust will be caused by excavation, vehicle movement hence engine combustion and materials handling, particularly downwind from the construction sites during the construction phase of the identified investments. Uncovered stock piles and asphalt mixing plant operations are another source of dust. Air pollution will be further caused by emissions from vehicles and construction machinery. There will be decreased air quality due to dust, suspended particles, hydrocarbon vapours, oxides of nitrogen and sulphur (NO_x and SO_x) and Volatile Organic Compounds (VOC) among other emissions.

6.3.11 Changes in downstream morphology of the riverbed and banks

The impact of the proposed water projects like irrigation schemes, bulk water supply dams on downstream habitats will be through changes in the sediments load of the rivers. All rivers carry some sediment as they erode their watershed. When the river is held behind a dam in the reservoir for a period of time, most of the sediment is trapped in the reservoir and settle to the bottom. Clear water below the dam will recapture its sediments load by eroding the downstream bed and banks. Eventually all the erodible material on the riverbed below the dam will be eroded away, leaving a rocky streambed, and a poorer habitat for aquatic fauna. However, this is a phenomenon that will be experienced up until the river reaches new sediment load equilibrium.

Proposed investments may affect and change downstream water quality and will manifest in change in river temperature, nutrient load, and turbidity; dissolve gases, concentration of heavy metals and minerals. For example for dam and irrigation projects, when river water is held in a reservoir for a period of time, the quality of the water is affected. When a reservoir is first firmed, submerged vegetation and soil decomposes. As it does so it will deplete oxygen in the reservoir water. Deoxygenated water can be lethal to both plant and animal lives.

6.3.12 Dam safety related impacts and Flooding

Poor dam design and maintenance may lead to dam breakage and therefore flooding that may lead to deaths and destruction of property. In case of dam break, it can have far reaching impacts on the downstream communities. Emergency plans and procedures will have to be developed to handle such an incidence. Although its occurrence may have far reaching consequences, the impact is mitigable and the probability of its occurrence will be minimized through dam safety plans, inspection procedures and disaster management procedures and thus the magnitude of this impact is expected to be medium negative.

6.4 Social Impacts

6.4.1 Diseases Spread-Public Health

Improve access to water and irrigation will have positive benefits on the lives of the communities such improved in yield and better access to drinking water. However, it also could have some negative impacts. Dams and diversion weirs could impact the health situation of those living close to them due to increase in the number of mosquitoes as one example.

There is a potential risk that the construction process for most of the investment projects could increase HIV/AIDS prevalence in the project areas especially through interactions of the locals with the labour forces. Increase in risk of sexually transmitted diseases, such as HIV/AIDS etc. due to influx of migrant workers; solid waste and effluent discharge from construction camps; risk of increase in vectors of *schistosomiasis*, *river blindness*, *Lymphatic filariasis (elephantiasis)* and malaria due to stagnant water associated with construction works/borrow pits etc. (targeting bulk water supply schemes, flood management, dams or irrigation schemes).

6.4.2 Incessant Traffic including accidents

Traffic congestion from construction and operation phases of the investments and which could potentially cause disruption, health and safety impacts, as well as economic impacts. The use of heavy moving construction vehicles and machineries in project sites is generally known to cause traffic reducing movement and flow of vehicles. It is also further envisaged that with the improvement of the transport sector (i.e. construction, expansion or of new roads, highways and bridges) the traffic volumes and speeds will increase, and composition will change. This is likely to cause increased frequency and severity of accidents.

6.4.3 Loss of Land

There will be loss of farm land, grazing land, business and structures among others by the local communities owning the land. The construction of irrigation schemes, dams, bulk water supply systems, among others. The existing land use of the project area will be affected by the construction of access roads, construction camps, opening up of material sites and quarry sites among others. These will scar the land, cause vegetation loss leading to soil erosion. The construction activities is almost all the sectors will involve a relatively high degree of land take bearing in mind that most of the projects are linear in nature thus requiring adequate land and space.

There are populations who may lose their land, assets and means of livelihood due to infrastructures and programs needed for the investment under WSCRП especially when investments such as irrigation, multipurpose dams, surface and underground water development, and catchment management, among others are considered.

6.4.4 Impact on social fabric and community relations

Some of the infrastructure as well as loss of land can cause communities to be separated and some of the social and economic relations and reliance disturbed. For example irrigation canals or dams are likely to segment the communities and in certain instances deny them access to land and to one another.

6.4.5 Resource Use Conflicts

Increasing irrigation schemes and dam construction for example under WSCRП investments and as a result the increase in the amount of land under irrigation could cause conflict between those with different water needs such as agriculturists and pastoralist, fishery, household use, to name some.

Women having different needs with respect to water for household use as well as household plots, which are mainly tended by women, could be negatively impacted if measures are not considered for household needs when expanding irrigation schemes and specific needs of women with respect to water resources. The vulnerable and marginalised groups could lose access to some of their sacred sites and ancestral lands. To address the issues related to the latter group, the Vulnerable and Marginalized Groups Framework has been prepared under the WSCRП.

Flood control investments could limit the access of those who use the flood plain for cultivation. The investments that are forming users' associations should make sure they are inclusive of all users and groups, including women, pastoralists, agriculturists, businesses in the area, fishermen, among others. The project can cause some changes in social processes such as demographic change and resource-use conflicts.

6.4.6 Gender Issues and Impacts

As noted above, women have different needs and use of water including for domestic household use, small households plots for agriculture, for animals among other things. Construction of irrigation schemes as well as dams, bulk water storage facilities can limit women access to water for such needs. As a result, different needs of women with respect to land and water use should be taken into consideration when designing the investments under WSCRП to avoid their potential discrimination from access to land and water as a result of the WSCRП.

6.4.7 Impacts on Vulnerable and Marginalised Groups

Changing land patterns and workloads resulting from the introduction or formalizing of irrigation are likely to affect men and women, ethnic groups and social classes unequally. Groups that use "common" land to make their living or fulfil their household duties, e.g. for charcoal making, hunting, grazing, collecting fuel wood, growing vegetables etc. may be disadvantaged if that same land is taken over for irrigated agriculture or for building irrigation infrastructure. Historically, it has been men from the more settled and powerful

groups that have had greatest access to the benefits and increased income from irrigated agriculture. Women, migrant groups and poorer social classes have often lost access to resources and gained increased workloads. Conversely, the increased income and improved nutrition from irrigated agriculture benefit women and children in particular. Inclusion of disadvantaged groups into the planning process maybe time-consuming, but should be considered an important aspect of ESIA.

Irrigation agriculture related projects may ignore the role of women in agriculture and existing producer groups as well as water users associations. Similarly inadequate capacity, access to services (extension and others) and decision making especially for women may tilt the scale and cause further disparity among women who may be affected negatively by the investments. The formation of Irrigation Water Users Associations or producers associations must be compelled to include gender inclusivity and this has been embraced by the Water Act for example and will be considered during the investment stages of the sub projects in regard to institutional and organisation development framework.

Vulnerable groups include special marginalised groups, orphans, and child headed households, the sick, elderly and female headed households among others and who may be adversely affected by the proposed investments especially in the event that their status as vulnerable or marginalised groups is not considered in the preparation of the specific investments. In order to ensure that vulnerable groups are given special attention, a Vulnerable and Marginalised Groups Framework (VMGF) has been prepared for the WSCRП which will include the preparation of specific Vulnerable and Marginalised Groups' Plans (VMGPs).

6.4.8 Noise and Vibration Impacts

Construction activities could result in significant noise impacts so as to impact on general well-being, health and functioning. Large scale infrastructure developments involve the use of heavy equipment (graders, drilling equipment, trucks, blasting equipment, tractors, and excavators) for among others rock blasting, excavation, asphalt mixing plant operations and vehicular movement that emit incessant noise usually harmful to the environment. Introduction of new sources of noise is an issue in areas where ambient noise levels have been low.

6.4.9 Health and Safety of Construction Workers

Occupation health and safety of the workers during the construction phase (and in certain cases operation phase) is likely to be a concern due to the accidents that normally occur in construction sites that could cause loss of life, limbs among others.

6.4.10 Solid and Effluent Waste Hazards Generation and Pollution

Solid waste issue is a potential adverse impact that will be as a result of abandonment of litter/construction materials on site, use of plastic container/bags by road users and the construction crew and use of polythene sheet for curing by the contractor. Construction camps may be a further source of both solid and liquid wastes.

6.4.11 Increased crime and in-migration

The increase in the number of people in a specific project area or site especially during construction has the potential to lead to a number of negative socio-economic impacts, including increased insecurity and community conflicts, increased incidences of diseases; increased risk of accidents and occupational hazards; and immigration of construction workers and labour force management challenges.

6.4.12 Visual Intrusion:

Unsightly earthworks and borrow pits during construction may be a source of visual related impacts especially through scarring of landscapes. During operations, visual intrusion of equipment on site may be seen as a negative impact at the local level.

6.4.13 Food Security

There is a possibility the increase in investments for example irrigation system may decrease the food security of the people living in the area due to more attention to cash crops. This could specially affect the women and children who have less access to cash crops and more advance farming.

6.4.14 Employment Issues

The construction activities of sub project investments may require recruitment of “foreign” skilled and unskilled labour that could trigger conflict, resentment and tension by the local communities over perceived inequities in distribution of job opportunities by the local communities.

6.4.15 Risk of drowning

There is a risk of drowning by both children and adults in the reservoirs. Furthermore, domestic animals may also drown in the reservoir while trying to drink from it. Although this risk leads to loss of lives, it can be avoided and mitigated thus the magnitude of the impact is considered to be medium negative and can be mitigated by planting trees and other vegetation to reduce accessibility, carry out surveillance and off the dam area and sensitization of the community of emergency plans of action in case of disasters.

6.5 POTENTIAL CUMULATIVE IMPACTS

Cumulative Impact Assessment (CIA) has been defined, and is applied in this Section, as the analysis of all the effects on an area from one or more activities as they accumulate over time and space (IPENZ, 2000). Cumulative effects can be different in nature (e.g. additive, synergistic or interactive), larger in magnitude, greater in significance, more long-lasting, and/or greater in spatial extent than is the case with individual effects (IPENZ, 2000). Additionally, the individual impacts from a single development may not be singularly significant on their own, but when combined with other impacts, those effects could become significant (Cooper, 2004).

WSCRIP investment projects may individually have insignificant adverse environmental impacts. However, several water investments in combination, or in combination with other government or private sector activities within the water sector, could have a larger, more significant cumulative impact. This is particularly likely to be the case for:

- Groundwater depletion owing to the demand for water; Combined reductions in flow volumes within a particular river resulting from irrigation, municipal and industrial water withdrawals
- Surface water depletion, owing to the impact of several diversion schemes on small streams and watercourses.
- Cumulative impact on aquatic and terrestrial flora and fauna across the basins due to multiple water investment projects are likely to be experienced.
- Cumulative impact on hydrological flows, at various points within specific project investment, at various points within a day, season, year, over the years and cumulatively across the basin and impacts thereof. This will include impacts on various hydrological elements including springs, tributaries, groundwater aquifers, etc.

As suggested by Cooper (2004) CIA must into consideration other relevant plans or projects which may affect the same valued attributes as outlined above. These include major infrastructure projects planned within any given water basin where sub project investments under WSCRIP are planned. Typical sub project activities identified as having the potential for long term cumulative impact include among others:

- Dam construction including canals
- Water Abstraction for irrigation, hydropower, domestic use
- Water deviation for irrigation, hydropower, domestic use
- Vegetation clearing and inundation;
- Increased use of fertilisers and pesticides in irrigations schemes

These were identified as leading to potential long-term cumulative impacts of:

- Loss of habitat and connectivity;
- Changes to downstream flows; and
- Eutrophication and pollution
- Reduced water for downstream users hence conflict
- Regional economic benefits.

Loss of habitat and connectivity

The cumulative impact of dams and clearing or inundation is on species and communities of flora and fauna. Measures that address the cumulative impact relate to the rehabilitation and offset strategies. These aim to provide and protect appropriate areas of vegetation over the long term such that habitat is available for the impacted flora and fauna. This multiplier ensures that the offset is adequate to address the impact. With mitigation and offsets, the development of these sub projects is not expected to have a cumulative impact upon the terrestrial flora or fauna.

Changes in Downstream Flows Impacts

Changes to the low flow regime may have significant negative impacts on downstream users, whether they abstract water (irrigation schemes, drinking supplies) or use the river for transportation or hydropower. Minimum demands from both existing and potential future users need to be clearly identified and assessed in relation to current and future low flows. The quality of low flows is also important. Return flows are likely to have significant quantities of pollutants. Low flows need to be high enough to ensure sufficient dilution of pollutants discharged from irrigation schemes and other sources such as industry and urban areas. A reduction in the natural river flow together with a discharge of lower quality drainage water can have severe negative impacts on downstream users, including irrigation schemes.

Habitats both within and alongside rivers are particularly rich, often supporting a high diversity of species. Large changes to low flows ($\pm 20\%$) will alter micro-habitats of which wetlands are a special case. It is particularly important to identify any endangered species and determine the impact of any changes on their survival. Such species are often endangered because of their restrictive ecological requirements.

The ecology of estuaries is sensitive to the salinity of the water, which may be determined by the low flows. Saline intrusion into the estuary will also affect drinking water supplies and fish catches. It may also create breeding places for anopheline vectors of malaria that breed in brackish water.

Potential cumulative environmental impacts related to inter-basin transfers include water quality changes (positive or negative) and impacts on the habitats of fish and other aquatic species.

In addition, resettlement due to the acquisition of land for investments may combine with induced migration of people (for labour, services etc.) to place greater pressure on natural resources in particular areas. The avoidance and mitigation of cumulative impacts requires: avoidance and mitigation of the impacts of individual projects; careful planning, based on sound technical knowledge, of the location, size, and material requirements of infrastructural projects, within the district and regional planning cycles.

Growth-inducing potential: Each new proposed investment/action can induce further actions to occur. The effects of these "spin-off" actions (e.g., increased vehicle access into a previously unroaded hinterland area) may add to the cumulative effects already occurring

in the vicinity of the proposed action, creating a "feedback" effect. Such actions may be considered as "reasonably-foreseeable actions"

6.6 Environmental & Social Management Process

This ESMF contains potential mitigation measures and monitoring indicators (*see tables 6 and 7*) through which the adverse impacts for specific sub project investments may be managed. However, each sub project investment will have to prepare an ESMP. The ESMP for each sub project should at a very minimum contains among others;-

- *Description of the possible adverse effects that the ESMP is intended to address;*
- *Identification of project design alternatives that would meet similar objectives, and a description of why these projects are not viable, especially if they have a lesser environmental or social impact;*
- *Description of planned mitigation measures, and how and when they will be implemented*
- *Program for monitoring the environmental and social impacts of the project, both positive and negative;*
- *Description of who will be responsible for implementing the ESMP; and*
- *Cost estimate and source of funds.*

6.6.1 Mitigation considerations and options

All moderate to major adverse impacts are considered for mitigation. Specific measures have been suggested in this regard where practicable. With regard to negligible and minor impacts where the project activity is not expected to cause any significant impact in such cases, best practice measures and mitigation have also been recommended where appropriate to improve the environmental and social performance of the Project. The mitigation options considered may include project modification, provision of alternatives, project timing, pollution control, compensations and relocation assistance. In cases where the effectiveness of the mitigation is uncertain, monitoring programs are introduced.

6.6.2 Recommended mitigation measures

The mitigation measures or guidelines have been designed in order to avoid, minimize and reduce negative environmental and social impacts at the project level. The mitigation measures are presented in the following tables in a descriptive format.

Table 6: Proposed mitigation measures

Impacts	Description of mitigation measures
Physical Environment	
Waste disposal	<p><u>Solid nontoxic waste</u> Adequate waste receptacles and facilities should be provided at project sites/camp sites</p> <p>Training and awareness on Safe Waste Disposal in construction camps for all workers</p> <p>Final disposal should be at dumpsites approved by the NEMA</p> <p><u>Waste oil /fuel</u> Spent or waste oil from vehicles and equipment should be collected and temporarily stored in drums or containers at site</p>

	Waste oil should be disposed of by oil marketing companies or agents approved or recognized and have the capacity to undertake oil disposal
Air pollution	<p>Proposed investments should require that construction contractors operate only well maintained engines, vehicles, trucks and equipment. A routine maintenance program for all equipment, vehicles, trucks and power generating engines should be in place.</p> <p>The project should ensure the use of good quality fuel and lubricants only</p> <p>If dust generation at the project/construction site becomes a problem, limited wetting of sites and or unloading and reloading points should be done to reduce dust raising</p> <p>Construction traffic speed control measures should be enforced on unpaved roads (speed limits through communities should be ≤ 50km/hr on unpaved roads and near or at project site should be ≤ 30 km/hr).</p> <p>Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.</p>
Noise and vibration	<p>Proposed investments should require contractors to use equipment and vehicles that are in good working order, well maintained, and that have some noise suppression equipment (e.g. mufflers, noise baffles) intact and in working order. This will be achieved by making it a component of contractual agreements with the construction contractors.</p> <p>Contractors will be required to implement best driving practices when approaching and leaving the site (speed limit of ≤ 30 km/hr) to minimize noise generation created through activities such as unnecessary acceleration and breaking squeal.</p> <p>Engines of vehicles/trucks and earth-moving equipment should be switched off when not in use.</p>
Impacts on Landscape and Visual Receptors	Landscaping of facilities after construction and restoration of disturbed areas e.g. borrow pits
Impact on traffic and Public safety	<p>Only road worthy vehicles and trucks should be used to avoid frequent breakdowns on the roads</p> <p>Only experienced drivers should be employed</p> <p>Contractors must provide training for drivers; Establish speed limits; Enforce safe driving and take disciplinary action against repeat offenders</p>
Water use	Obtain water abstraction permits from the Water Resources Management Authority (WRMA)
Water pollution	<p>No garbage/refuse, oily wastes, fuels/waste oils should be discharged into drains or onto site grounds</p> <p>Fuel storage tanks/sites should be properly secured to contain any spillage</p> <p>Maintenance and cleaning of vehicles, trucks and equipment should take place offsite especially where project sites are close to water bodies.</p> <p>Toilet facilities should be provided for construction workers to avoid indiscriminate defecation in nearby bush or local water bodies</p> <p>For project investments where pesticides are used e.g. irrigation, an Integrated Pest Management Plan (IPMP) should be prepared</p>
Soil and Land degradation	<p>Minimize land clearing areas as much as possible to avoid unnecessary exposure of bare ground to the elements of the weather</p> <p>Re-vegetate cleared areas as early as possible using native plant species</p>

	<p>As much as possible, avoid construction work in the rainy season</p>
Impact on fauna and habitat	<p>Avoid unnecessary exposure and access to sensitive habitat areas</p> <p>For identified or suspected sensitive habitats (swamps/ wetlands), regular inspection or monitoring should be carried out in the area prior to start and during work.</p> <p>If sensitive habitats are encountered, Project activities should cease and the Project should consult KWS to determine the appropriate course of action.</p> <p>If the project site is discovered as a sensitive habitat area, the Project should engage the KWS to develop a suitable plan.</p>
Impacts on inland water bodies/ Fauna/habitat	<p>Prohibition on hunting and consumption of bush meat by workforces</p> <p>Proposed investments should require that contractors implement a hazardous materials management plan that includes specification for proper storage and handling of fuels, oil, wastes, and other potentially hazardous materials as well as a plan for containment and clean-up of accidental spills into the aquatic environment.</p> <p>During pre-installation and installation of project facilities, spotting of sensitive aquatic mammals should form part of the project activities. Should these species be observed in the vicinity of the work area, the project should execute measures to avoid destruction or disturbance.</p> <p>Ensure provision for water flow reserves and appropriate reservoir filling schedules</p> <p>Project staff must report sightings of any injured or dead aquatic life (fishes)/ mammals immediately, regardless of whether the injury or death is caused by a Project activity. The report should include the date and location of the animal/strike, and the species identification or a description of the animal. The report should be made to the NEMA or KWS.</p> <p>The Project workforce and local communities should be educated to ensure that the importance of environmental protection and nature conservation are effectively communicated and that wider appreciation of environmental issues and construction best practice are fostered.</p>
Social Environment	
Physical displacement	<p>All affected persons to be given relocation assistance (cash or kind) by the Project to enable them move their properties to new locations, i.e. in accordance with the Resettlement Policy Framework (RPF)</p> <p>Resettlement Plans will be required. If a site is acquired, the State may relocate persons and their families as well as community facilities to be affected. The affected families should not be made to incur any cost during the relocation period. A resettlement plan should be prepared for this area with the RPF as a guide.</p>
Loss of Employment and livelihoods	<p>Those whose livelihood is affected should be assisted to ensure they will not be worse off as a result of the project. This can include livelihood assistance, provision of new jobs immediately without any loss of income. The social assessments and socio-economic surveys, which will be undertaken for the preparation of individual investments/subprojects as well as the resettlement action plans, should assess these issues and provide measures in accordance with the Resettlement Policy Framework (RPF).</p> <p>Contractors should use local labor as much as possible and where available. As much as possible, all unskilled labor should be contracted or obtained from the local community.</p>

Loss of land and other assets	Due process should be followed to establish the true owner of any land, be it family or communal land. Once established, the project should acquire the site by paying appropriate compensation in accordance with the resettlement policy framework (RPF), which would be the replacement cost of the assets lost.
Loss of structures/properties	<p>For a project site to be used, irrespective of the land ownership, appropriate compensation should be paid for any structures/ properties which are permanent structures at the site as well as investment made for any development on the land.</p> <p>Depreciation should not be factored during valuation of these properties. The compensation process should satisfy the RPF developed for the project.</p> <p>Appropriate compensation should be paid for any damaged or destroyed propriety that belongs to affected persons. No depreciation during valuation of these properties.</p>
Impact on access among communities living in the project areas	Measures will be considered in the projects' design to ensure that communities are not divided and if they are as a result of a project appropriate measures are taken to mitigate this impact.
Impacts on recreation and public areas	Appropriate notices and warning signs will be erected around working areas and public areas to warn prospective trespassers of any danger or risk
Impacts on Human Health/ Traffic Safety and sanitation	<p>Trucks carrying construction materials such as sand, quarry dust, laterite etc. will have the buckets covered with tarpaulin or appropriate polythene material from or to project site</p> <p>Only road worthy vehicles/trucks should be used</p> <p>Only experienced drivers/operators should be employed</p> <p>Except for areas secured by fencing, all active construction areas will be marked with high-visibility tape to reduce the risk accidents involving pedestrians and vehicles.</p> <p>All open trenches and excavated areas will be backfilled as soon as possible after construction has been completed. Access to open trenches and excavated areas will be secured to prevent pedestrians or vehicles from falling in.</p> <p>Adequate sanitary facilities will be available for workers and open range defecation will not be countenanced.</p> <p>Construction workers will be provided with and educated to wear suitable Personal Protective Equipment (PPE) including hard hats, overalls, high-visibility vests, safety boots, earplugs, gloves etc.</p> <p>Enforce use of PPEs at all times for all staff and labourers and ensure supervision of the same to minimise accidents</p> <p>Construction workers should be educated to adhere to basic rules with regard to protection of public health, including most importantly hygiene and disease (HIV/AIDS) prevention.</p>
Impacts on cultural heritage / archaeological interest / existing ecologically sensitive areas	<p>The pre-construction surveys should identify cultural heritage resources and existing ecologically sensitive areas that the project should avoid and by-pass these resources.</p> <p>The Project should implement a chance find procedure and reporting system to be used by contractors in the event that a cultural heritage feature or ecologically sensitive item/issue is encountered.</p>
Impacts on Human Health and Public Safety	The Project will require all contractors to implement an Environmental, Health and Safety (EHS) plan which will outline procedures for avoiding health and

	<p>safety incidents and for emergency medical treatment. This will be achieved by making it a component of contractual agreement.</p> <p>Contractors will be required to wear suitable Personal Protective Equipment (PPE) including hard hats, high-visibility vests, safety boots and gloves and life vests as appropriate in accordance with the EHS plan.</p> <p>Enforce use of PPEs at all times for all staff and labourers and ensure supervision of the same to minimise accidents</p> <p>All construction and other workers will be sufficiently trained in the safe methods pertaining to their area of work to avoid injuries.</p>
Labor related issues	The project to prepare redundancy plans and packages to be discussed with affected workers which will include re- training and re- tooling of affected workers and aim to avoid labor strife.
Waste Pollution from construction camps	<p>Prepare Waste Disposal Plan for every construction site</p> <p>Install waste disposal receptacles and signs in strategic places within the construction camps</p> <p>Provide training and awareness on need to avoid littering</p> <p>Ensure the construction camps have toilets and connected to the sewer system</p>
Impact on gender access to water for household use and household plots as well as impact on pastoralists and fisheries.	The project will take into consideration the different needs for water and types of access which will be affected for each of these groups and provide relevant mitigation measures which will be decided with those affected. Some mitigation measures could include water points for household use and livestock; livelihood assistance to those whose whole or partial livelihood will be affected as a result of some of the possible investments such as irrigation schemes and dams. Specific impact and relevant measures will be covered by project specific social assessment.
Impacts on vulnerable and marginalized groups (orphans, child and women headed households, the sick, elderly etc.)	The project will ensure that all the vulnerable and marginalised groups are identified and profiled and through the Vulnerable and Marginalised Groups Framework (VMGF) specific plans are designed for each investment to consider the wellbeing of the vulnerable and marginalised groups identified.
HIV/AIDS Spread and other related Public Health Diseases – Water borne diseases etc.	<p>Design HIV/AIDS awareness, sensitisation and prevention program for each project that extends to the communities as a whole;</p> <p>Design programs for reducing the spread of water borne diseases like Malaria, Bilharzia etc. in collaboration with the Ministry of Health</p>
Downstream Impacts of Dams and other water infrastructure e.g. irrigation investments, bulk water supply,	Maintain environmental flow reserves for the river, Do into retain water in reservoir during drought, ensure that water retention in dam is controlled to ensure that adequate reserve is left to flow downstream for users
Dam Safety Impacts	Ensure dam is designed by specialists; Institute a dam safety panel and develop a dam safety plan for all dams
Construction Camp Impacts	Where appropriate, additional measures should be developed to address any additional environmental and social issues (e.g. cumulative and induced impacts) that may arise during construction.
Labour and Employment Related Impacts	Ensure that the local communities are given priority in relation to employment and provided with training (skilled) to provide future labour in the project e.g. operation and maintenance

6.7 Monitoring Plans and Indicators

6.7.1 Monitoring of Environmental and Social Indicators

The goal of monitoring is to measure the success rate of the project, determine whether interventions have resulted in dealing with negative impacts, whether further interventions are needed or monitoring is to be extended in some areas. Monitoring indicators will be very much dependent on specific project contexts.

Monitoring Levels-Overall Project Level

The MEWNR/State Department of Water will be responsible for monitoring and reporting on compliance with the ESMF. The State Department of Water/MEWNR will ensure that sub projects investments are screened, their safeguard instruments prepared, cleared and disclosed prior to sub project approval. Further, State Department of Water/MEWNR will ensure that executing agencies implement or cause their contractors to implement the specific sub project ESMP, and submit reports on ESMP implementation as required.

Within the State Department of Water/MEWNR, monitoring and surveillance of all the sub project investments will be undertaken by the WSCR/PMU that will be established for the project. The MEWNR will report results of this monitoring to the Bank. In appreciation of the fact that it would be impossible to visit or monitor all sub project investments to be financed under the project, “spot checks” may be undertaken by the WSCR/PMU but no investment will be ignored in this high level monitoring.

Bank’s Monitoring Support

The Bank will provide the second line of monitoring compliance and commitments made in the ESMP through supervision albeit in a less frequent manner and detail as compared to the first line of monitoring that will be undertaken by the PMU. The bank will further undertake monitoring during its scheduled project supervision missions.

Specifically, for each year that the agreement is in effect, sub project executing agencies within the WSCR will be required to submit to the PMU all the monitoring reports and the PMU will consolidate and summarise these reports and submit to the Bank as part of its reporting to the Bank and the Bank supervision missions will review these reports and provide feedback.

Sub Project Level Monitoring

The second level of monitoring will be at the sub project level where the safeguard instruments for the investments will and must include a monitoring plan for which the executing agency will be responsible for ensuring that monitoring is carried out. Each sub project investment will set up an implementation unit solely responsible for executing the investment and which will include responsibility for monitoring and reporting all the elements in the ESMP on day to day or periodically as specified in the monitoring plan. The sub project level monitoring reports will be submitted to the environmental safeguards specialist at the WSCR/PMU for review and analysis. The higher level monitoring at the PMU level will check to see that executing agencies are doing this.

All sub project investments will be subject to mandatory annual environmental audit /supervision to ensure that they comply with national requirements by EMCA.

Table 7: Monitoring indicator

Monitoring Level	Monitoring Issue	Verifiable Indicators	Responsibility
ESMF Level	Adequate dissemination of ESMF and RPF to stakeholders	Record of consultations and meetings; Workshop reports.	MEWNR, Consultants MEWNR, Consultants

Project Level	Investment	Capacity building and training programs		
		Preparation of environmental and social impact assessment report	Independent consultants hired to prepare ESIA and/ RAP documents	Line Ministries, Consultants
		Environmental permitting	Environmental Permits for sub projects	Investor, Line Ministries, NEMA
		Monitoring and evaluation	Environmental Management Plans, Monitoring Reports, Annual Environmental Reports	Investor, Line Ministries, NEMA

Table 8: Project monitoring indicators and responsibilities

Impact issue	Proposed Action/Measures	Implementation tool/criteria	Monitoring indicators (Inputs)	Monitoring Indicators (Outcomes)	Verification	Project stage	Responsibility
Solid waste disposal	<p>Provide adequate waste reception facilities at construction camp sites</p> <p>Dispose of waste at approved waste collection sites</p>	Waste management plan/Construction site management plan	<p>Number of waste bins at site bins</p> <p>Availability of waste disposal plan</p> <p>Final disposal records</p>	<p>Percentage of workers who follow the solid waste disposal plan including use of receptacles</p> <p>Number of workers familiar and aware of the waste disposal plan at the construction sites</p>	Weekly checks by project engineer	<p>Construction</p> <p>Operation</p>	<p>Contactor</p> <p>Project engineer</p>
Waste oil/fuel disposal	<p>Provide drums/containers for temporary storage on site of waste oil from equipment and vehicles.</p> <p>Dispose of waste oil through an approved agent</p>	Waste management plan/Construction site management plan	<p>Waste oil drums/containers on site</p> <p>Availability of waste disposal plan (waste oil)</p>	<p>Number of workers familiar and aware of the waste disposal plan</p> <p>Percentage of workers who follow the waste disposal plan including use of receptacles</p>	Monthly checks by project engineer	<p>Construction</p> <p>Operation</p>	<p>Contactor</p> <p>Project engineer</p>

Air pollution	<p>Purchase sound equipment/machinery for project</p> <p>Operate well maintained vehicles, trucks and other equipment</p> <p>Use good quality fuel and lubricants</p> <p>Suppress dust generation at project sites</p> <p>Switch off engines when not in use</p>	<p>Part of contract agreement</p> <p>Routine maintenance plan for machinery</p> <p>Purchase of fuel at recognized stations</p> <p>Schedule of works is to limit</p> <p>Water surfaces several times a day to reduce dust at the site.</p>	<p>Number of sound machinery and equipment purchased</p> <p>Availability of equipment and machinery maintenance plan</p> <p>Frequency of watering of surfaces to reduce dust related impacts</p>	<p>Percentage of workers following the good practices for equipment and machinery maintenance</p>	<p>Independent check by project engineers</p> <p>Verification of maintenance record by project engineers</p> <p>Self-check by contractor</p>	Construction	Contactor/Project engineer
Noise pollution	<p>Schedule of works is to be limited to daylight hours</p> <p>Compliance with the noise emission levels/standard of NEMA</p> <p>Provision of PPE for workers for noise pollution</p> <p>Train workers on the use of PPEs for noise mitigation and reprimand those not complying</p>	Part of contract agreement for the contractors	<p>Recorded grievances</p> <p>Number of PPE procured for noise mitigation</p>	<p>Number of workers correctly and frequently using PPEs</p> <p>Number of workers aware of the emissions standards of NEMA and complying with the same</p>	Self-check by contractor	Construction	Contactor/Project engineer

Impacts on landscape	Landscaping of facilities after construction, and restoration of disturbed areas	Construction site and maintenance and restoration plan.	Implementation of the plan	Quality of restored landscapes Number of disturbed sites successfully restored	Self-check by contractor	Construction	Contactor/Project engineer
Traffic impacts	Use only road worthy vehicles and trucks Use experienced drivers Contractors must provide driver training Establish speed limits, Enforce safe driving and take disciplinary action against repeat offenders.	Purchase sound vehicles and trucks /machinery for project Driver qualification recorded Traffic Safety Plan	Traffic incidence records Grievances Recorded	Number of drivers aware and familiar with the traffic safety plan Percentage of drivers who have not committed a traffic offence for the last 6 months Number of compliance (traffic) inspection and checks conducted by traffic department found to be satisfactory	Project engineers to verify	Construction	Contactor/Project engineer

Water pollution	<p>No garbage/refuse, oily wastes, fuels/waste oils should be discharged into drains or water bodies</p> <p>Fuel storage tanks/sites should be properly secured</p> <p>Maintenance and cleaning of vehicles, trucks and equipment should take place offsite.</p> <p>Provide toilet facilities for construction workers</p> <p>Construction activities, including camps to include measures to control runoff</p>	<p>Waste management plan Spill prevention and control plan</p> <p>Water Quality Plan to measure the quality of water including physical, chemical and biological.</p> <p>Implement an Integrated Pest Management Plan when using fertilizers and pesticides</p>	<p>Visibility of oil on water bodies</p> <p>Procurement and installation of water monitoring and measuring gauges</p> <p>On site erosion observed</p> <p>Proposed actions implemented</p> <p>Quality of water following periodic measurements</p> <p>No of pollution incidences recorded</p> <p>Number of complaints on pollution of water</p>	<p>Increased water quality upstream and downstream shown by periodic measurements</p> <p>Water samples collected showing compliance to water pollution standards</p>	<p>Daily self-checks by contractors</p> <p>Periodic reports on performance by contractor to project engineers</p> <p>Spot checks/audits by project engineers</p>	<p>Construction</p> <p>Operation</p>	<p>Contractors /Project engineers</p> <p>Project engineers</p>
-----------------	--	---	--	--	--	--------------------------------------	--

<p>Impact on fauna and flora</p>	<p>Avoid unnecessary exposure or access to sensitive habitat.</p> <p>Avoid protected areas, critical habitats or areas with significant biodiversity (wetlands)</p> <p>Regular inspection or monitoring should be carried out in sensitive areas e.g. swamps/wetlands the area prior to start of work.</p> <p>Ensure proper storage and handling of potentially hazardous materials (including oil).</p>	<p>If a sensitive habitat is discovered in the work area or vicinity, Project activities should cease.</p> <p>The contractor should notify project engineers who will consult KWS to determine the appropriate course of action.</p> <p>Hazardous material management plan/accident management plan.</p> <p>Awareness raising among contractor personnel</p>	<p>Wildlife incidents recorded and reported to KWS/KFS/NEMA</p>	<p>Number or percentage of terrestrial flora and fauna unaffected by the sub projects</p> <p>Number of workers aware and sensitized on the need to conserve the flora and fauna</p> <p>Impact on terrestrial flora and fauna</p>	<p>Regular self-checks by contractor</p> <p>Spot checks and audit by contractor to the client</p>	<p>Construction</p> <p>Operation</p> <p>Maintenance</p>	<p>Contractors /Project engineers/KWS/NEMA</p>
<p>Waterlogging/ Erosion/Salinization</p>	<p>Thoroughly assess project soils and their management needs under irrigated agriculture</p> <p>Apply water efficiently (consider drip or dawn/evening sprinkler system)</p> <p>Install and maintain adequate surface and subsurface draining</p> <p>Use lined canals or pipes to prevent seepage</p>		<p>Incidences of gathering water from improper drainage</p> <p>Soil erosion and dampening of surrounding area due to seepage</p>	<p>Reduced waterlogging incidence</p>	<p>Regular site visits</p>	<p>Construction</p> <p>Operation</p> <p>Maintenance</p>	<p>Contractors /Project Engineers/NEMA</p>

<p>Avoid waterlogging (above)</p> <p>Mulch exposed soil surfaces to reduce evaporation</p> <p>Flush irrigated land regularly</p> <p>Cultivate crops having high tolerance to salinity</p> <p>Design and layout of furrows appropriately</p> <p>Avoid unsuitable gradients</p> <p>Avoid over-irrigation</p> <p>Install sediment traps in fields and canals to capture sediment for return to fields</p> <p>Minimum tillage, contour cropping, terracing and other methods of conserving soil moisture</p>		<p>Maintain log of hours/water used for irrigation</p>				
--	--	--	--	--	--	--

Table 9: Project monitoring indicators and responsibilities-Social Impacts

Impact issue	Proposed Action/ Measures	Implementation tool/criteria	Monitoring indicators (Input)	Monitoring indicators (Output)	Verification	Project stage	Responsibility
Impacts on downstream water users	Maintain Environmental Flows for river basins Ensure that abstraction of water complies with the WRMA permits	Environmental Flows Plan	Presence of an Environmental Flows Plan calculated and approved by WRMA Installation of Water Monitoring Stations Procurement of water measuring and monitoring equipment Availability of Water Abstraction Permit from WRMA	Impacts on water uses and livelihoods downstream	Regular spot checks by WRMA Periodic checks of the flows by environmental team	Construction Operation	Contractor Executing Agency NEMA WRMA
Impacts on recreation and public areas	Place notices and warning signs at working areas	ESMP	Grievance records	Recreational Facilities and areas restored/protected	Warning signs/notices in place	Construction	Contractors/Project engineers

Impacts on Human Health/ Safety and sanitation	<p>Cover buckets of trucks carrying construction materials such as sand, quarry dust, etc.</p> <p>Use road worthy vehicles/trucks and experienced drivers/operators</p> <p>Active construction areas to be marked with high-visibility tape</p> <p>Backfill and or secure open trenches and excavated areas.</p> <p>Provide adequate sanitary facilities</p> <p>Provide PPEs for construction workers.</p> <p>Educate construction workers on site rules/regulation and hygiene and disease (HIV/AIDS) prevention.</p>	<p>ESMP</p> <p>Vehicle maintenance programme/plan in place</p> <p>Construction site management plan</p> <p>ESMP</p> <p>ESMP</p> <p>ESMP</p> <p>ESMP</p>	<p>Health and safety incident register</p> <p>Grievance records</p>	<p>Reduced accidents and hazards in construction sites</p> <p>Reduced incidence of diseases spread e.g. HIV/AIDS, and other STDs</p> <p>Increased understanding of workers on measures to reduce STDs/HIV/AIDS etc.</p>	<p>Health and safety plan under implementation</p> <p>Daily self-checks and verification by contractor</p> <p>Spot checks by project engineers</p> <p>Periodic reports by contractor to project engineers</p>	Construction	Contractors
Impacts on cultural heritage/ archaeological interest /existing aquatic infrastructure and services	<p>Identify cultural heritage resources and existing ecologically sensitive areas.</p>	<p>Pre-construction surveys / Chance finds procedure</p> <p>Plan for accidental Cultural Finds</p>	<p>Cultural/ archaeological resources/ existing infrastructure encounter incidence register</p>	<p>Number of workers familiar with the chance find procedures</p>	<p>Chance finds procedure under implementation</p> <p>Daily self-checks and verification by contractor</p> <p>Periodic reports by contractor to project engineers</p>	Preconstruction and construction and repairs/ recovery	Contractors/NMK
Impacts on Human Health and Safety	<p>Use suitable Personal Protective Equipment (PPE).</p> <p>Provide Training on use of PPE</p>	<p>ESMP</p>	<p>Health and safety incident register</p> <p>Grievance records</p>	<p>Reduction in or increase in accidents due to use of or lack of use of PPEs</p>	<p>ESMP under implementation</p> <p>Spot checks and observations by project engineers</p> <p>Periodic reports on performance by contractor to project engineers</p>	Pre-construction and construction, and repairs/ recovery	Contractors

Labour related impacts (Employment)	Ensure that the local communities are given priority in relation to employment and provided with training (skilled) to provide future labour in the project e.g. operation and maintenance	Human Resource Management Plan	Number of local residents employed in sub projects	Number of local residents employed in sub projects	Employment Records	Pre-construction and construction, and repairs/recovery	Contractors/EA
-------------------------------------	--	--------------------------------	--	--	--------------------	---	----------------

6.8 Issues Related to Resettlement, Pest Management, Physical Cultural Resources, Vulnerable and Marginalised Groups Plan and Dam Safety

The WSCRП triggers other safeguard policies alongside this ESMF and thus the other related safeguard instruments have been prepared for the program. During the screening process of sub projects if identified as a requirement, a Resettlement Action Plan, Integrated Pest Management Plan, Vulnerable and Marginalised Groups Plan and/or a Physical Cultural Resources Management Plan, Dam safety measures or a combination of these, will be prepared alongside the Environmental and Social Management Plan (ESMP) as an integrated part of the overall investment management plan for the specific project.

6.8.1 Resettlement Action Plan

Resettlement Action Plans (RAPs) will be needed for investment that may result in the loss of access to resources. The RPF outlines the relevant steps required in order to ensure that appropriate measures are put in place to safeguard the rights of affected persons and communities.

6.8.2 Integrated Pest Management Plan

Integrated Pest Management Plans (IPMPs) will be required for each investment screened and confirmed that it will lead to increased pesticide use especially the irrigation related investments and this is in line with the OP 4.09 for pest management. The proposed project investments that are likely to use pesticides will have to list all the pesticide products authorised for procurement and they should be products registered by the Pesticide Control and Product Board of Kenya.

6.8.3 Physical Cultural Resources Management

A plan for the management of physical cultural resources shall form part of the ESIA for each investment since the WSCRП triggers the OP 4.11, it is important that the EIA also include identify the process for addressing impacts on cultural property. Measures will need to be integrated into the ESMP to address the following areas:

- Avoidance or mitigation of identified adverse impacts;
- Provisions for chance finds;
- Preparation, as appropriate, of a physical cultural resources management plan consistent with the overall policy framework and national legislation, taking into account institutional capabilities;
- Measures for strengthening institutional capacity; and
- Monitoring systems to track progress of these activities.

6.8.4 Protected Areas, Natural Habitats and Forests

OP 4.04 is triggered due to the fact that investments may be situated in or around sensitive ecological areas of Kenya like the wetlands, forest etc. Compliance will be handled through the ESMF and site specific ESIAs.

6.8.5 Dam Safety

Dams for bulk water supply, irrigation and or hydropower are some of the investments included in the WSCR-2, and in effect triggering the OP 4.37. When the World Bank finances a project that includes the construction of a new dam, it requires that the dam be designed and its construction supervised by experienced and competent professionals. It also requires that the Borrower adopt and implement certain dam safety measures for the design, bid tendering, construction, operation, and maintenance of the dam and associated works.

The World Bank distinguishes between small and large dams:

- a) Small dams are normally less than 15 meters in height. This category includes, for example, farm ponds, local silt retention dams, and low embankment tanks.
- b) Large dams are 15 meters or more in height. Dams that are between 10 and 15 meters in height are treated as large dams if they present special design complexities--for example, an unusually large flood-handling requirement, location in a zone of high seismicity, foundations that are complex and difficult to prepare, or retention of toxic materials. Dams under 10 meters in height are treated as large dams if they are expected to become large dams during the operation of the facility.

For small dams, generic dam safety measures designed by qualified engineers are usually adequate however for large dams competent experienced engineers, preferably with international experience and familiarity with World Bank, FERC and CDA requirements, should carry out dam designs. The designs must be reviewed by a dam safety panel which must be instituted for this purpose. Construction supervision should be comprehensive and carried out by competent site staff familiar with construction of dam projects.

Key issues to consider include:

- Users should restrict themselves to the construction of earth dams no higher than 5 m from streambed to finished crest level.
- Dams on catchment areas exceeding 25 km² or with reservoir areas storing more than 50,000 m³ may require the advice of a hydrologist to assist in the design of spillways and other outlets and for the estimation of freeboard.
- No spillway should be less than 10 m wide and 1 m deep for catchments up to 5 km² and should be at least 15 m wide and 1.5 m deep for catchments exceeding this area.
- Any dam that involves out of the ordinary topography (i.e. steep slopes upstream, risks of landslips), hydrology (i.e. flash floods, droughts, snowmelt) or soils (i.e. poor quality soils, sodic soils, permeable layers in the soil, bare earth surfaces in the catchment) should only be designed and constructed under the supervision of a qualified engineer.

6.8.6 Vulnerability and Marginalised People Plan

This plan will be an integral part of the ESMP especially on socio-economic aspects and is necessary because the WSCR triggers the OP 4.10. A VMGF has been developed as a

separate safeguard instrument for this project and contains a VMGP that will have to be prepared for each proposed project investment in an event that marginalised and vulnerable persons are located in the investment project site.

6.9 Monitoring Roles and Responsibilities

6.9.1 WSCRCP Executing Partner Institutions

The specific ministries or government agencies implementing the specific investment (once identified) under the WSCRCP will be solely responsible for the environmental monitoring of the activities that they are responsible for implementing. They will be required to prepare periodic (monthly, quarterly and annual) monitoring reports for submission to the WSCRCP/MEWNR/PMU which will then submit to the Bank and NEMA.

6.9.2 National Environment Management Authority (NEMA)

The EMCA places the responsibility of environmental protection on NEMA as the coordinating agency. NEMA is charged with the overall role of providing oversight in regard to monitoring for all project activities that have potential impacts on the environment in Kenya. NEMA will undertake periodic monitoring of the investment projects by making regular site inspection visits to determine compliance with the investment projects ESIA's approved and will further rely on the submitted annual audit reports submitted for each investment project annually as required by EMCA as a way of monitoring. NEMA will provide approvals and ESIA licence to all the investments based on the ESIA reports submitted, without NEMA's approval implementation of the investment project will not move forward. All monitoring reports as well as annual environmental audit report will be submitted to NEMA as specified by the environmental assessment and audit regulations.

6.9.3 WSCRCP/PMU -Environmental and Social Specialist

The WSCRCP/PMU has recruited environmental and social safeguard specialists who will provide oversight, screening of sub projects, preparation of ToRs for ESIA's, facilitation, coordination, review of ESIA's, monitoring and evaluation of all the sub projects. In view of the fact that a PMU is envisaged to take responsibility of the implementation of the WSCRCP, it is recommended that the PMU recruit or retain the environmental and social safeguards specialists all through the implementation period. In principle the 2 specialist will work with the executing agencies to ensure that monitoring of investments are undertaken and findings are reported to them periodically so that needed technical assistance to ensure compliance is provided.

The environmental and social specialists based at the WSCRCP/PMU will submit quarterly monitoring reports of all active investments under implementation to the WSCRCP /PMU Coordinator who will then submit these reports to the World Bank.

6.9.4 Others (Water Users Associations and Civil Society Organisations)

Water Users Associations and relevant CSOs in the area where a sub project investment is identified will be part of the monitoring and evaluation and will be provided with adequate training for on-going day to day monitoring.



7 PROJECT REVIEW, COORDINATION & IMPLEMENTATION ARRANGEMENTS

7.1 Sub Project Investment Review

The Environmental Management and Coordination Act (EMCA) require that all projects be subjected to a review and screening process in order to determine whether a full scale ESIA is necessary or otherwise. This is done through preparation of a project report which will be prepared by the WSCR/PMU jointly with the executing agency of the specific sub project investment. Each investment will need to be reviewed independently for potential environmental and social impacts. In cases where a full scale ESIA is required, it will be paramount that the feasibility studies occur concurrent with the ESIA study in order to ensure that the findings of the ESIA are incorporated in the feasibility study at the design stage. This will ensure that environmental sound design including proposed mitigation measures as well as alternatives are incorporated in the feasibility reports at the design stage hence avoiding design change at an advanced stage.

The WSCR has been rated as category **A** this requires a full scale ESIA which must be conducted parallel to the feasibility studies to ensure that the findings of the ESIA are incorporated in the feasibility study at the design stage. The Environmental Management and Coordination Act (EMCA) require that all projects be subjected to a review and screening process in order to determine whether a full scale ESIA is necessary or otherwise. Project investments will each need to be reviewed independently for potential environmental and social impacts.

A completed appraisal package comprises all of the results of the ESIA procedures in order to permit a full environmental review. If the World Bank determines that the appraisal package is not complete because the environmental procedures have not been completed, or because after further review it is discovered that the information provided earlier for the screening procedures was incorrect or misleading and that further information is required, the appraisal package will be deemed incomplete and the Task Manager will promptly notify the applicant of the deficiencies.

No WSCR support will be provided until (i) the applicant has presented the WB with a certified copy of the positive conclusion of the relevant national authority or - as the case may be - the World Bank determines that no further environmental review is required, and (ii) the World Bank has reviewed and cleared the environmental documentation and issued its formal no objection.

Consultation and Disclosure Requirements: In addition to the environmental documentation requirements described above, World Bank Operational Policy 4.01 (paragraphs 15 and 16), and the WB Policy on disclosure stipulates that the following consultation and disclosure requirements be utilized for all Category A sub projects:

Consultation should occur at least twice, once near the beginning of the EA process and once when a draft final report has been disclosed. During the EA process, the applicant

shall consult groups affected by the subproject and local NGOs about the subproject's environmental aspects and take their views into account. The applicant shall initiate such consultations as early as possible. Consultations with stakeholders should take place only ones after a draft EA report is prepared. In addition, the applicant shall consult with such groups throughout project implementation as necessary to address EA-related issues that affect them.

For meaningful consultations, the applicant shall apply the following disclosure requirements:

- The applicant shall provide relevant material in English and/or the local language (as appropriate) in a timely manner prior to consultation;
- The applicant shall make the draft ESIA report including a detailed summary of the ESIA's conclusions available at a public place accessible to groups affected by the subproject and local NGOs.

7.1.1 Screening and investment project preparation

Screening of investments will commence right at the project inception phase as soon as the specific sub project details are known including nature and scope, proposed location and area among other parameters. Screening is expected to happen concurrently with the project specific feasibility studies so that any potential impacts identified through screening are immediately incorporated into the feasibility study hence ensuring that environmental sound design of the sub projects occurs right at the project design phase.

The screening process could result in any of the following determination;-

1. Full ESIA
2. A stand-alone ESMP or
3. No further environmental study

7.1.2 Who prepares a screening checklist?

NEMA is the institution designated to make a decision on whether a full scale ESIA is necessary for proposed investments or otherwise. To make this determination, a project report must be submitted to NEMA in order to make a determination and this is part of the screening. The project/screening report will be prepared by WSCR/PMU on behalf of the executing agencies of the WSCR in the individual institutions and then submitted to the NEMA for further determination.

The Bank also requires that sub project investments are screened in order to make a determination as to whether a full scale ESIA, a standalone ESMP or no further environmental studies are needed for investments. In order to blend the requirements of the bank and that of NEMA, the screening will be done and submitted to the bank and NEMA respectively. In the event that both NEMA and the bank recommend for a full scale ESIA then the same will be prepared.

However, bearing in mind that the Bank will never recommend a less stringent environmental study than NEMA, even if NEMA could do so according to its own policies,

but (b) recognizing that the Bank may require a more stringent study than NEMA does and if so, that more stringent requirement will apply to the sub project concerned.

This implies that even if the screening is done to meet the bank requirements and a decision is made that an ESMP alone is sufficient by the Bank, the Bank will still expect that the executing agency for the sub project prepare a full ESIA if NEMA directs so. On the other hand, if NEMA determines that no ESIA is required following screening and submission of project report, and the Bank feels that project requires an ESIA, then the sub project executing agency will need to prepare the same to satisfy and get approval for the sub project from the Bank.

Format 1.0: SCREENING CHECKLIST (Filled and prepared by environmental and social experts in WSCRП executing agencies or by consultants if agencies lack experts)

IFPPP Project: Select relevant project

Project Investment name [type here]
 Location [type here]
 Estimated cost (USD) [type here]

TYPE OF PROJECT OR ACTIVITY

Sub Project Type

- Construction of Bulk Water Supply Systems
- Construction of Multi-Purpose Dams
- Construction of water supply pipelines
- Construction of Hydropower Dams
- Construction of Irrigation Systems/Schemes
- Construction of Flood Control and Mitigation Canals/Dykes
- Construction of wells and boreholes

Please give more details: [type here]

For all projects, an Environmental and Social Management Plan (ESMP) will be required.		
In addition, the following studies may be required:		
Will this project affect vulnerable and marginalised groups? If yes, a Vulnerable and Marginalised Groups' Plan will be required	<input type="checkbox"/>	<input type="checkbox"/>
Will the project require land for its development, and therefore displace individuals, families or businesses from land that is currently occupied, or restrict people's access to crops, pasture, fisheries or forests, even, whether on a permanent or temporary basis. If yes, a Resettlement Action Plan will be required	<input type="checkbox"/>	<input type="checkbox"/>
Will the investment project involve the construction of dams?	<input type="checkbox"/>	<input type="checkbox"/>
Will the Project:	Yes	No
Adversely affect natural habitats nearby, including forests, rivers or wetlands?	<input type="checkbox"/>	<input type="checkbox"/>
Require large volumes of construction materials (e.g. gravel, stone, water, timber, firewood)?	<input type="checkbox"/>	<input type="checkbox"/>
Use water during or after construction, which will reduce the local availability of groundwater and surface water?	<input type="checkbox"/>	<input type="checkbox"/>
Affect the quantity or quality of surface waters (e.g. rivers, streams, wetlands), or groundwater (e.g. wells, reservoirs)?	<input type="checkbox"/>	<input type="checkbox"/>
Be located within or nearby environmentally sensitive areas (e.g. intact natural forests, mangroves, wetlands) or threatened species?	<input type="checkbox"/>	<input type="checkbox"/>
Lead to soil degradation, soil erosion in the area?	<input type="checkbox"/>	<input type="checkbox"/>
Create waste that could adversely affect local soils, vegetation, rivers and streams or groundwater	<input type="checkbox"/>	<input type="checkbox"/>

Create pools of water that provide breeding grounds for disease vectors (for example malaria or bilharzia)?	<input type="checkbox"/>	<input type="checkbox"/>
Involve significant excavations, demolition, and movement of earth, flooding, or other environmental changes?	<input type="checkbox"/>	<input type="checkbox"/>
Affect historically-important or culturally-important site nearby?	<input type="checkbox"/>	<input type="checkbox"/>
Require land for its development, and therefore displace individuals, families or businesses from land that is currently occupied, or restrict people's access to crops, pasture, fisheries, forests or cultural resources, whether on a permanent or temporary basis?	<input type="checkbox"/>	<input type="checkbox"/>
Result in human health or safety risks during construction or later?	<input type="checkbox"/>	<input type="checkbox"/>
Involve inward migration of people from outside the area for employment or other purposes?	<input type="checkbox"/>	<input type="checkbox"/>
Will the Project:	Yes	No
Result in conflict or disputes among communities?	<input type="checkbox"/>	<input type="checkbox"/>
Affect indigenous people, or be located in an area occupied by indigenous people?	<input type="checkbox"/>	<input type="checkbox"/>
Be located in or near an area where there is an important historical, archaeological or cultural heritage site?	<input type="checkbox"/>	<input type="checkbox"/>
Result in a significant change/loss in livelihood of individuals?	<input type="checkbox"/>	<input type="checkbox"/>
Adversely affect the livelihoods and /or the rights of women?	<input type="checkbox"/>	<input type="checkbox"/>
If you have answered Yes to any of the above, please describe the measures that the project will take to avoid or mitigate environmental and social impacts	[type here]	
What measures will the project take to ensure that it is technically and financially sustainable?	[type here]	

If the answer to any of questions “Yes”, please use the indicated Annexes or sections(s) of the ESMF for guidance on how to avoid or minimize typical impacts and risks.

When considering the location of an investment, rate the sensitivity of the proposed site in the following table 10 according to the given criteria. Higher ratings do not necessarily mean that a site is unsuitable. They do indicate a real risk of causing undesirable adverse environmental and social effects, and that more substantial environmental and/or social planning may be required to adequately avoid, mitigate or manage potential effects.

Table 10: Site Sensitivity Rating

Issues	Site Sensitivity			Rating (L,M,H)
	Low (L)	Medium (M)	High (H)	
Natural habitats	No natural habitats present of any kind	No critical natural habitats; other natural habitats occur	Critical natural habitats present	
Water quality and water resource availability and use	Water flows exceed any existing demand; low intensity of water use; potential water use conflicts expected to be low; no potential water quality issues	Medium intensity of water use; multiple water users; water quality issues are important	Intensive water use; multiple water users; potential for conflicts is high; water quality issues are important	
Natural hazards vulnerability, floods, soil stability/erosion	Flat terrain; no potential stability/erosion problems; no known volcanic/seismic/ flood risks	Medium slopes; some erosion potential; medium risks from volcanic/seismic/ flood/ hurricanes	Mountainous terrain; steep slopes; unstable soils; high erosion potential; volcanic, seismic or flood risks	
Cultural property	No known or suspected cultural heritage sites	Suspected cultural heritage sites; known heritage sites in broader area of influence	Known heritage sites in project area	

Issues	Site Sensitivity			Rating (L,M,H)
	Low (L)	Medium (M)	High (H)	
Involuntary resettlement	Low population density; dispersed population; legal tenure is well-defined; well-defined rights	Medium population density; mixed ownership and land tenure; well-defined rights	High population density; major towns and villages; low-income families and/or illegal ownership of land; communal properties; unclear rights	
Indigenous peoples	No indigenous population	Dispersed and mixed indigenous populations; highly acculturated indigenous populations	Indigenous territories, reserves and/or lands; vulnerable indigenous populations	

CONCLUSION

Which course of action do you recommend?

- FULL ESIA ESMP RAP/RPF is the reference document with reference to resettlement issues
- VMGP OTHER ENVIRONMENTAL/SOCIAL PLANS
- There are no environmental or social risks

[Type here]

If a RAP is required, will the project Displace or restrict access for less than 200 individuals, or if over 200, are losses for all individuals less than 10% of their assets?

- If Yes,** Prepare an abbreviated RAP
- If No,** Prepare a full RAP

Full details of resettlement requirements are provided in the accompanying Resettlement policy Framework.

Completed by: [type here]
Name: [type here]
Position: [type here]
Date: [type here]

Format 2.0: SCREENING CHECKLIST REVIEW FORM (Prepared by Environment and Social Specialists from WSCR/PCU/MEWNR)

	Yes	No
Based on the location and the type of investment, please explain whether the Proponent’s responses are satisfactory.	<input type="checkbox"/>	<input type="checkbox"/>
Their description of the compliance of the investment with relevant planning Documents	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their responses to the questions on environmental and social impacts	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their proposed mitigation measures	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		
Their proposed measures to ensure sustainability	<input type="checkbox"/>	<input type="checkbox"/>
If ‘No’, please explain: [type here]		

REVIEWER'S CONCLUSION

Which course of action do you recommend?

- FULL ESIA** **ESMP**; **RAP-RPF is the reference document with reference to resettlement issues**
 There are no environmental or social risks

[Type here]

If a RAP is required, will the investment displace or restrict access for less than 200 Individuals, or if over 200, are losses for all individuals less than 10% of their assets?

If Yes, Prepare an abbreviated RAP

If No, Prepare a full RAP

Full details of resettlement requirements are provided in the accompanying Resettlement Policy Framework. If this differs from the Proponent's recommended course of action, please explain:

[Type here]

- Preparation of a project Report, based on field appraisal by NEMA District Officer, is required to investigate further, specifically to investigate:

[Type here]

- Reject**

Review form completed by: [type here]

Name: [type here]

Position / Community: [type here]

Completion of this screening form will facilitate the identification of potential environmental and social impacts, determination of their significance, assignment of the appropriate environmental category, proposal of appropriate environmental mitigation measures, or recommend the execution of an Environmental and Social Impact Assessment (ESIA), if necessary.

Development of project reports follows systematic process as follows;

- *Review of TORs with the implementing partners for adequacy*
- *Familiarization with project design*
- *Familiarization with projects area of influence*
- *Identification of the relevant statutes and WB safeguard policies*
- *Determination/ Identification of all stakeholders to project*
- *On-the-ground investigations of the bio-physical baseline*
- *Consultations with stakeholders*
- *Impact prediction and interpretation*
- *Identification of mitigation measures*
- *Development of an environmental management plan complete with budget and identification of responsibilities*
- *Finalization of project report*

7.1.3 Statutory content of Project Reports:

Regulation 7(1) of Legal Notice 101 stipulates content of Project Reports to include the following:-

- *The nature of the project;*
- *The location of the project including the physical area that may be affected by the project's activities;*

- *The activities that shall be undertaken during the project construction, operation, and decommissioning phases;*
- *The design of the project;*
- *The materials to be used, products, by-products, including waste to be generated by the project and the methods of disposal;*
- *The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation;*
- *An action plan for the prevention and management of possible accidents during the project cycle;*
- *A plan to ensure the health and safety of the workers and neighbouring communities;*
- *The economic and socio-cultural impacts to the local community and the nation in general;*
- *The project budget;*
- *Any other information that the Authority may require.*

Once a project report is submitted to NEMA, a decision is made by NEMA and in the event that NEMA, based on the project report submitted makes a decision that an ESIA report must be prepared, the WSCRП executing agency for that specific sub project will be required to identify independent NEMA registered expert(s) to prepare an ESIA report in accordance with the EMCA.

Project Reports are normally prepared as a means of informing NEMA of the proposed development such that after review of the report, NEMA advises on the need or otherwise for a full ESIA. The ESIA regulations allow for approval of proposed projects at the Project Report Stage and have been effectively used by NEMA to grant Environmental Licenses to small projects without requiring a full ESIA.

Table 11: The NEMA Process for Approving Investment Project Reports

Steps	Action	Actor	Time requirement
One	Submission of PR to NEMA. NEMA receives PR, issues a receipt and acknowledgement.	WSCRП/PCU and Implementing partners	To be undertaken by WSCRП/ PCU and Implementing partners environmental and social specialists with input from the Safeguards Advisor
Two	NEMA mails PR to Lead Agencies	NEMA	7 days assuming all requirements are fulfilled
Three	Lead agencies review PR and issue comments	Lead Agencies	21 days (minimum) after receipt of PR from NEMA.
Four	Review of PR by NEMA	NEMA	30 days after receipt of PR.
Five	Communication of findings from NEMA review	NEMA	45 days after receipt of PR.

Typical outcomes of review of Project Reports from NEMA are likely to be as shown in **Table 12** below. These are as follows:

Project investment is approved. Where NEMA and lead agencies ascertain that a project report has disclosed adequate mitigation for identified impacts, the project is approved by NEMA upon which, conditions attached to grant of an Environmental License are issued. Once these are fulfilled, an Environmental License is also issued subject to conditions

which will be specific to the sub project in question. Among these is the requirement that the scheme design should not be altered without approval by NEMA. As well, an audit report is required of each project after the first year of completion.

Project Report discloses potential for major irreversible adverse impacts. In this case, NEMA may not approve the project.

Table 12: Possible Outcomes of NEMA Review of Project Reports

Outcome	Recommendation	Important precautions
Project found to have no significant Social and Environmental Impacts or Project report discloses sufficient mitigation measures	An Environmental License will be issued by NEMA	Project report must disclose adequate mitigation measures and show proof of comprehensive consultations within the area of influence.
Significant adverse social and environmental impacts found or Project Report fails to disclose adequate mitigation measures.	A full cycle EIA will be required by NEMA	As above
A proponent is dissatisfied with the outcome of the NEMA review.	An Appeal is provided for	

In the eventuality that a Project cannot be approved by NEMA on the basis of a Project Report, the proponent will be advised to undertake full cycle ESIA leading to development of a fully-fledged Environmental and Social Impact Assessment Study Report. **Figure 11** below outlines the ESIA process and review to be followed in an event that a determination for a full scale ESIA is arrived at by NEMA.

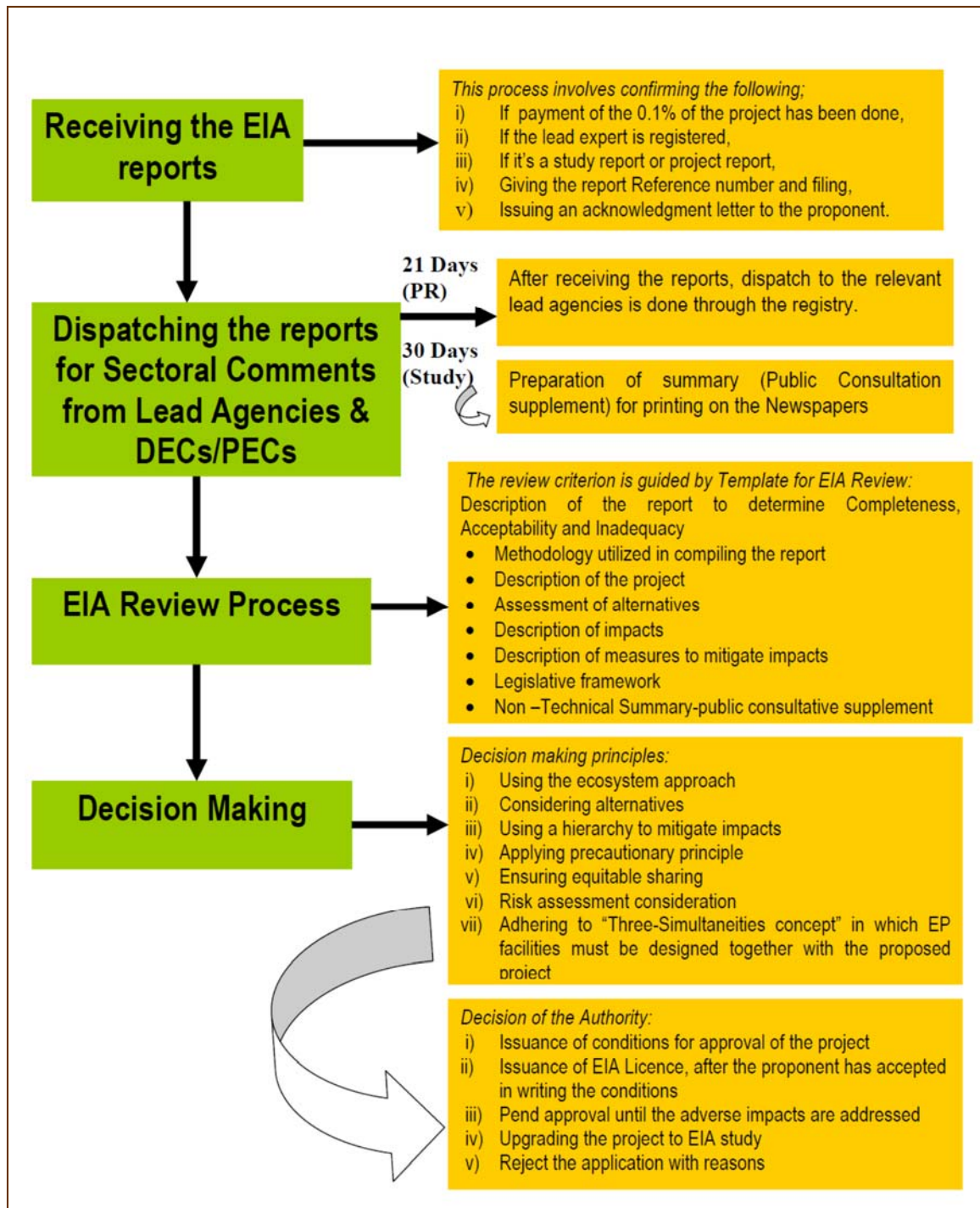


Figure 11: EIA process

7.1.4 Scoping Report

Firstly, on advice from NEMA, the proponent will prepare a Scoping Report specifying the project’s area of influence, the thematic scope and depth of assessments required, the composition of the required ESIA team, and the probable budget required to prepare the ESIA Study.

7.1.5 ESIA Study

Upon review and approval of the Scoping Report, NEMA will advise that an ESIA Study be undertaken. The ESIA Study will entail a systematic investigation of all impact areas as identified in the scoping report, taking care to document the current baseline environment, resource exploitation patterns and ecological pressure points.

The implementing agency will prepare the Terms of Reference for the ESIA which will be reviewed by the WSCR/PMU Environmental and Social Specialist in collaboration with the and follow procurement rules for the recruitment of consultants for the ESIA. In certain instances where there are no specialists within the implementing agency to prepare the ToR, then the PMU environmental and social specialist will prepare this ToR.

Also, the impact mitigation measures provided in this ESMF may provide some basis for the design of the ToR. To facilitate the formulation of the ToR, a template has been prepared and provided in the **Annex G** of this report. In the case of existing operations, the outline for Environmental and Social Management Plans (ESMPs) is also given.

The ESIA will identify and evaluate potential environmental impacts for the proposed investments, evaluate alternatives, and design mitigation measures. The preparation of the ESIA will be done in consultation with stakeholders, including people who may be affected. It is mandatory for the ESIA study to undertake public consultation with all stakeholders in the project's area of influence. Public consultations are critical in preparing a proposal for the activities of the WSCR likely to have impacts on the environment and population. The public consultations should identify key issues and determine how the concerns of all parties will be addressed in the ESIA. When an ESIA is necessary, the administrative process enacted by the NEMA will be followed and executed. The ESIA Team should note and understand all stakeholder interests so as to cater for them in the ESMP. All accruing information will be written into a Draft ESIA Report prepared in the same format as the project Report and submitted to NEMA for review. Upon review of this report, it will be subjected to public review.

7.1.6 Social Impact Assessment Process

The breadth, depth, and type of analysis required for the social assessment will be proportional to the nature and scale of the proposed project investment's potential and effects on the affected persons.

The social assessment will be conducted by socio-economic experts and will ensure that through primary and secondary literature search critical information including (i) ethnic composition and demographic characteristics; (ii) land use; (iii) water use; (iv) non-agricultural activities such as livestock/itinerant pastoralism, fishing and other income generating activities; (v) socio-cultural issues regarding decision making within communities; (vi) gender division of labor and rights/responsibilities; (vii) use of land, land and resource tenure, access to and control over resources, resource rights including those related to water; (viii) access to different services and inclusion in the producer organizations based on gender; and (ix) baseline health situation with a focus on water borne and sexually transmitted diseases (STDs) among others are collected and documented

7.1.7 Public Review of the ESIA Report

EMCA provides for public consultation and review of all EIA reports prepared and dictates that all ESIA documents be disclosed at certain points for the public to provide comment. Copies of ESIA are placed at vantage points including the NEMA Library and NEMA website, NEMA Regional Offices and the sector Ministry responsible for a particular undertaking. NEMA serves a 21-day public notice in the national and local newspapers about the ESIA publication and its availability for public comments. When the public review period elapses, the comments and issues raised by the public are consolidated and addressed and the report re-submitted as final.

7.1.8 ESIA Review Process

The Implementing Agency will submit the draft ESIA to NEMA. The report will be reviewed by a cross-sectoral National Environmental and Social Impact Assessment Technical Review Committee (ESIA/TAC) made up of representatives of various Ministries, Departments and Agencies. Notable ones are the Ministry of Environment and Mineral Resources, Science and Technology, Ministry of Energy, Ministry of Forestry and Wildlife, Ministry of Environment, Water and Natural Resources, Works and Housing, Town and County Planning etc. The review committee is expected to:

- *Assist the Agency in screening/reviewing all Environmental Assessment Applications and Reports (Environmental Impact Statements, Annual Environmental Reports, Environmental Management Plans and other related reports)*
- *Make recommendations to the Director General of the NEMA for final decision-making*
- *Provide technical advice on conduct of assessments and related studies on undertakings and the reports submitted on them;*
- *Make recommendations on the adequacy of the assessment and any observed gap;*
- *Advice on the seriousness of such gaps and the risks or otherwise to decisions required to be made recommend whether the undertakings as proposed must be accepted and under what conditions, or not to be accepted and the reasons, as well provide guidance on how any outstanding issue/areas may be satisfactorily addressed.*

The review committees are mandated to co-opt relevant officials as and when necessary. In certain instances the support of international ESIA institutions such as the Netherlands ESIA Commission are solicited in review of some major or controversial projects where there is limited national expertise.

7.1.9 Environmental Permitting Decision (EPD)

In cases where the draft ESIA is found acceptable, the implementing agencies of the specific WSCRPs executing agency and PMU will be notified to finalize the reports and submit 10 hard copies and an electronic copy. Following submission to NEMA, the implementing agency shall be issued an Environmental License.

7.1.10 Annual Environmental Audit

An independently commissioned environmental and social audit will be carried out on an annual basis. The audit team will report to NEMA, MEWNR/WSCRPs/PMU and the World Bank, who will lead the implementation of any corrective measures that are required. An audit is necessary to ensure (i) that the ESMF process is being implemented appropriately, and (ii) that mitigation measures are being identified and implemented. The audit will be

able to identify any amendments in the ESMF approach that are required to improve its effectiveness.

The annual audit also provides a strong incentive for the MEWNR to ensure that the ESMF will be implemented, and the individual ESMPs will be developed and implemented.

7.2 Overall Project Compliance and Reporting

The ESMF will be implemented by the WSCRП executing agencies. The implementing agency will collaborate with the safeguards specialist within the PMU and the World Bank to ensure effective execution. **Table 13** provides a summary of the stages and institutional responsibilities for the screening, preparation, assessment, approval and implementation of the WSCRП project activities.

Table 13: Screening Responsibilities.

No.	Stage	Institutional responsibility	Implementation responsibility
1.	Screening of Environmental and Social Infrastructure Project to assist in project formulation using checklist	Implementing agency, MEWNR	Environmental Officer (EO) /Safeguard specialists in the executing agency and PMU
	Statutory Environmental Registration of WSCR investments	Implementing agency/MEWNR	Environmental Officer executing agency and PMU
2.	Determination of appropriate environmental assessment level/ category	NEMA / Implementing agency	-
2.1	Selection validation	World Bank	-
3.	Implementation of environmental assessment	Implementing agency	Environmental Officer executing agency and PMU
	If ESIA is necessary		
3.1	Preparation of Terms of Reference	Implementing agency	Environmental Officer executing agency and PMU
3.2	Validation of ESIA/ESMP TOR	NEMA/ World Bank	PCU Safeguard Specialist
3.3	Selection of Consultant	Implementing agency/MOF/ Procurement Office	EO/ Procurement Officer/ PMU Safeguard Specialist
3.4	Realization of the EIA, Public Consultation Integration of environmental and social management plan issues in the tendering and project implementation	Implementing agency/Procurement Office/Consultancy firm/Contractor	Safeguards Consultant/ Environmental Officer/ Procurement Officer/ PMU Safeguard Specialist
4.	Review and Approval	NEMA/ World Bank/ MOW/ Implementing Agency	
4.1	ESIA Approval (Category A, high-risk B)	NEMA/ World Bank	
4.2	Simple ESIA/ESMP Approval (Category B and C)	Implementing agency	Environmental Officer/Project manager
5.	Public Consultation and disclosure	Implementing agency / NEMA	EO/Contractor// PMU Safeguard Specialist
6.	Surveillance and monitoring	Implementing agency/NEMA/ World Bank/ MOWI	Environmental Officer// PMU Safeguard Specialist
7.	Development of monitoring indicators	Implementing agency	Environmental Officer /PMU Safeguard Specialist

8 CAPACITY BUILDING, TRAINING AND TECHNICAL ASSISTANCE –WSCR P

8.1 Institutional Capacity for ESMF Implementation

The principal institution that will provide overall coordination including administration of the WSCR P is the MEWNR in order to ensure environmentally sound design and management of proposed project investments. However, other institutions will be directly or indirectly involved and they include among others:-

- *NEMA*
- *Ministry of Finance for disbursement of funds*
- *MEWNR executing agencies e.g. NIB, WSBs, WRMA, WASREB,*
- *World Bank*
- *NEMA*
- *Water Users Association*

8.1.1 Ministry of Environment, Water and Natural Resources

MEWNR is the principal implementing institution for this project and a senior official in the Ministry will be the overall Project Coordinator. MEWNR will also be responsible for day-to-day implementation (project management, financial management, procurement, disbursement, monitoring, including environmental and social aspects of the project etc.) for all components.

Due to the planned restructuring of key ministries, the Project will be managed by a WSCR P/PMU initially housed in the MEWNR and then, if necessary, transferred to the successor Ministry responsible for water resources management and development. Specific arrangements for administering project activities by the PMU at other levels will be established during project design. An Environmental and Social Specialist will be recruited (possibly the 2 specialists providing safeguards support during the PPA stage may be retained). The functions of the specialists will include working with consultants and reviewing reports as well as ensuring that safeguard decisions are adequately mainstreamed. They will also participate in monitoring and evaluation exercises.

The executing agencies of this project will report periodically to the WSCR P/PMU/MEWNR on all issues and aspects related to this project including environmental and social safeguards.

8.1.2 Other Relevant Government line ministries and agencies

The technical capacity and capability of the institutions that will be implementing the ESMF for the WSCR P will require bolstering in order to ensure effective implementation of the Environmental and Social Management Framework (ESMF). At present, several key executing agencies within MEWNR expected to implement certain sub projects within the WSCR P do not have to a great extent in-house capacity and specialist in environment and social safeguards.

A capacity needs assessment of the implementing partner institutions on social and environmental evaluation, screening, mitigation and monitoring will be necessary as part of the capacity strengthening program. This ESMF proposes capacity building by way of awareness creation and sensitization, actual training through workshops and seminars as well as short courses as described below for different stakeholder and implementing partners within the WSCRCP.

8.1.3 Water Users Association

The Water Act provides for formation of Water Users Association for each water catchment and solely remains responsible for ensuring the protection of water resources and catchment including playing a significant role in the management of the specific water resource. WUAs will play a critical role in monitoring and evaluation and management of water projects and thus will require training and capacity building on environmental safeguards to strengthen their role.

8.2 Identification of Capacity Needs

The first step in pursuing capacity building will be to identify the capacity needs of the various stakeholders. Capacity building should be viewed as more than training. It is human resource development and includes the process of equipping individuals with the understanding, skills and access to information, knowledge and training that enables them to perform effectively. It also involves organizational development, the elaboration of relevant management structures, processes and procedures, not only within organizations but also the management of relationships between the different organizations and sectors (public, private and community). The capacity building requirements will mostly be in the form of training workshops and seminars.

8.2.1 Technical Capacity Enhancement

Awareness creation, training and sensitization will be required for personnel of the following institutions.

- *National Environment Management Authority*
- *Environmental and Social officers from implementing partner ministries and agencies*
- *Local Engineering Contractors who will be contracted or sub contracted to undertake the construction works*
- *Local Governments Authorities*
- *County Environment Officers*
- *Water Users Association*

8.2.2 Training will focus on:

- *Stakeholder engagement, consultation and partnerships;*
- *ESIA law, relevant environmental policies;*
- *Water Quality Monitoring*
- *Development of mitigation measures and Environmental Management Plans*
- *Thorough review of Country ESIA procedures, Environmental Management Policies & Guidelines and WB safeguards as well as their implementation and enforcement.*
- *The group will also be trained on use and application of ESMF tools (Screening checklists, ESIA), their review, implementation and enforcement.*

- *Participants will be trained on environmental reporting, monitoring and follow-up of ESMF*
- *Community Consultation/Participatory Planning*
- *Significant emphasis will be placed on understanding ESIA procedures, Environmental Management policies & guidelines, WB safeguards, implementation and enforcement*
- *Reporting, monitoring and follow-up of ESMF*

Table 14: Trainings and Target groups

Training Aspect	Target group
EIA law, relevant Environment policies and World Bank Safeguard Policy and guidelines	Government agency representatives including district-level officials, NGOs, CBOs.
Relevant social laws and policies	Government agency representatives including district-level officials, Local Government, Private Sector, NGOs, CBOs and community members.

Table 15: Training directly linked to implementation ESMF

	PCU and Central Govt. Agencies	Local Auth.	Private Sector	NGO & CBO	Community
Role of ESMF in WSCR	A	S	S	S	S
Identification of Indicators and data collection		TS	TS	TS	TS
Identification of environmental and social Impacts		T	T	T	T
Determination of negative and positive impact of project investments	T	T	T	T	A
Development of mitigation measures and Environmental Management Plan including Institutional Responsibility Framework and Budget.		T	T	T	T
EIA procedures, Environmental Management policies & guidelines, WB safeguards, implementation and enforcement	T	S	S	S	S
Use and application of ESMF tools (Screening checklists, ESIA, EA)	T	T	T	T	T
Review of ESMF tools, implementation and enforcement	T	T	S	T	S
Reporting, monitoring and follow-up of ESMF	S	T	T	T	S
Training of Consultants on Public Consultation Process	T	T	T	T	S

* *A=Awareness-T=Training-S=Sensitization*

Contractors and supervision consultants as part of best practice, and in order to comply with international standards for Occupational, Health and Safety (OHS), will be provided with awareness raising and environmental and OHS training on site. These should focus not only on the construction phase but also operational phase of the Project. A proposed format for 1 day training is provided in the following **Table 16** below.

Table 16: Awareness raising and training for civil work contractors and supervision consultants

Topic	Input
Awareness raising <ul style="list-style-type: none">• Environmental awareness and the importance of effective mitigation• Practice mitigation measures and environmentally sound construction techniques• Compliance with local legislation on OHS, EIA and ESMP requirements	0.5 day
Technical training <ul style="list-style-type: none">• Implementation of the ESMP (contract clauses)• Monitoring of ESMPs (and RAPs)• Preparation of budgets	0.5 day
Total	1 day

The training and capacity building exercises will take into consideration during their development, the integration and fulfilment of the requirements of World Bank social and environmental policies and guidelines, as well as those on Environmental Protection (including relevant policies, regulations and guidelines). Where institutional capacity in terms of availability of human resource is inadequate, the project will engrain support for this through hiring of qualified staff to provide necessary expertise.

Training directly linked to the implementation of the ESMF should be undertaken first and subsequently followed with regular interval training on aspects influencing success of ESMF. The training program/agenda below provides a sample training outline and course content. The training programmes have been clustered into appropriate groups to facilitate for various target groups. Target groups for training, awareness and sensitization will be as follows.

8.3 ESMF Implementation Budget

The estimated total cost for ESMF implementation is indicated in the *table 17* below and included the resettlement implementation costs.

Table 17: Overall costs for implementation of ESMF in WSCR

Activity	Description	Unit cost, US\$	No	Total Cost, US\$
Preparation and implementation of ESIA, ESMPs and related safeguard management plans for investments funded from the investment pool	Recruitment of Consultants and experts to prepare and review the ESIA and ESMPs	1,000,000.00		1,000,000.00
Monitoring of ESIA, ESMPs and related safeguard management plans for investments funded from the investment pool	Recruitment of Consultants and experts to monitor the ESIA and ESMPs	1,000,000.00		1,000,000.00
Awareness creation and Capacity building	Training workshop/seminars on Programme for MEWNR, project staff	500,000.00		500,000.00
Study tours	Selected environmental champions participating in WSCR drawn from NEMA, MEWNR, Implementing Agencies to visit related or similar project sites	150,000	Biannual	150,000.00
Capacity building/improvement for Line Ministries	Training workshops	500,000.00	Biannual	500,000.00
Awareness creation for general public	Radio, TV discussions, Newspaper adverts on issues relating to ESMF	50,000		50,000.00

9 PUBLIC CONSULTATION AND DISCLOSURE

9.1.1 ESMF Disclosure

The World Bank disclosure policies require that ESIA reports for sub projects are made available to project affected groups, local NGOs, and the public at large. Public disclosure of ESIA documents is also a requirement of the Kenya environmental procedures. MEWNR in collaboration with the line agencies and NEMA will make available copies of the ESMF and ESIA's on the respective websites and offices of the ministries. Public notice in the media should be used to serve as information source to the public. However, the ESIA's will have to be advertised in the local newspaper, website of NEMA, that of the executing agency and MEWNR. The notification should provide:

9.1.2 Public Consultation

The implementation of each specific sub project investment under the WSCRП will require that public consultation and stakeholder engagement is carried out as a means of gathering information on public concerns, issues, perception, fears and suggestions on proposed investment. Public consultation will be conducted in line with the requirements of Environmental Management and Coordination Act (EMCA) which calls for utilisation of all forms of consultation and stakeholder engagement and the Bank's requirements for public consultation. The consultations will be conducted through among others;-

- *Key Informant Interviews*
- *Direct Interviews with Project Affected Persons*
- *Workshops and Meetings*
- *Public Hearings (Barazas)*
- *Advertisements' in the print and electronic media*
- *Focus Group Discussions*
- *Internet and telephone interviews*

9.1.3 Grievance Mechanism

Grievance mechanisms provide a formal avenue for affected groups or stakeholders to engage with the project implementers or owners on issues of concern or unaddressed impacts. Grievances are any complaints or suggestions about the way a project is being implemented. They may take the form of specific complaints for damages/injury, concerns about routine project activities, or perceived incidents or impacts. Identifying and responding to grievances supports the development of positive relationships between projects and affected groups/communities, and other stakeholders.

The World Bank standards outline requirements for grievance mechanisms for some projects. Grievance mechanisms should receive and facilitate resolution of the affected institutional or communities' concerns and grievances. The World Bank states the concerns should be addressed promptly using an understandable and transparent process that is culturally appropriate and readily acceptable to all segments of affected communities, at no cost and without retribution. Mechanisms should be appropriate to the scale of impacts and risks presented by a project.

Grievances can be an indication of growing stakeholder concerns (real and perceived) and can escalate if not identified and resolved. The management of grievances is therefore a vital component of stakeholder management and an important aspect of risk management for a project. Projects may have a range of potential adverse impacts to people and the environment in general, identifying grievances and ensuring timely resolution is therefore very necessary.

9.1.4 Establishment of Grievance Redress Committee

Each sub project investment will have a Grievance Redress Committee (GRC) established for the purpose of handling grievances related to environmental and social concerns. The GRCs will be ad hoc institutions established primarily for the sub project investment and will have no legal mandate. The GRC will be established under the guidance of NEMA County/District Officer and comprise of:

1. Project Affected Persons representative
2. Environmental and Social Specialists from the WSCRП Executing Agency
3. NEMA County/District representative
4. Representatives from relevant line ministries
5. Contractor/Engineers
6. Women and Youth Representatives
7. Representation of active NGOs or CBOs in project area

Table 11: Grievance Redress Process

Process	Description	Time frame	Other information
Identification of grievance	Face to face; phone; letter, e-mail; recorded during public/community interaction; others	1 Day	Email address; hotline number
Grievance assessed and logged	Significance assessed and grievance recorded or logged (i.e. in a log book)	4-7 Days	Significance criteria: Level 1 –one off event; Level 2 – complaint is widespread or repeated; Level 3- any complaint (one off or repeated) that indicates breach of law or policy or this ESMF provisions
Grievance is acknowledged	Acknowledgement of grievance through appropriate medium	7-14 Days	
Development of response	Grievance assigned to appropriate party for resolution Response development with input from management/ relevant stakeholders	4-7 Days 7-14 Days	
Response signed off	Redress action approved at appropriate levels	4-7 Days	Project staff to sign off
Implementation and communication of response	Redress action implemented and update of progress on resolution communicated to complainant	10-14 Days	
Complaints Response	Redress action recorded in grievance log book Confirm with complainant that grievance can be closed or determine what follow up is necessary	4-7 Days	
Close grievance	Record final sign off of grievance If grievance cannot be closed, return to step 2 or refer to sector minister or recommend third-party arbitration or resort to court of law.	4-7 Days	Final sign off on by WSCR/PMU Coordinator

9.1.5 Public Complaints Committee

The Public Complaints Committee on Environment is an organ established by the EMCA whose role is to address complaints by the public on projects and investments that the public oppose due to environmental and social impacts. In an event that the public is dissatisfied with the proposed projects the PCC will serve as the first stop for getting redress and if this fails then the National Environmental Tribunal (NET) another organ set up by NET to resolve environmental and social disputes on investments will form the next avenue for redress.

9.1.6 Land and Environment Courts

The Constitution of Kenya (CoK) has further provided for specific courts to deal with land and environment (Land and Environment Courts) that are charged with playing a vital role in reconciling environmental related disputes and these courts will serve as the ultimate stop in the event of disputes or complaints that cannot be resolved through other alternative means.



10 REFERENCE

1. Government of Kenya Environmental Management and Coordination Act 1999
2. Government of Kenya Land Control Act
3. Government of Kenya Local Government Act
4. Government of Kenya Physical Planning Act
5. Government of Kenya Public Health Act
6. Government of Kenya Forest Act
7. Government of Kenya Vision 2030
8. Government of Kenya Water Act 2002
9. Government of Kenya Occupational Health and Safety Act
10. Government of Kenya The Land Acquisition Act
11. Government of Kenya The Trust Land Act
12. Government of Kenya Antiquities and Monuments Act, Cap
13. Government of Kenya The Lakes and Rivers Act Chapter 409 Laws of
14. Government of Kenya The Employment Act
15. Government of Kenya National Policy on Environment and Development Sessional Paper No. 6 of 1999
16. Government of Kenya National Environmental Sanitation and Hygiene Policy-July 2007
17. Government of Kenya Fisheries Policy
18. Government of Kenya Forest Policy 2005
19. Government of Kenya Draft Wildlife Policy 2007-Draft
20. Government of Kenya Wildlife Conservation and Management Act
21. Project Documentation for WSCR P
22. Survey of Kenya 2003
23. World Bank Aide Memoire for WSCR P
24. World Bank Draft Project Appraisal Document (PAD), WSCR P

Annex A. Stakeholders Consulted

The following key institutions likely to implement the WSCRП have been consulted so far and as the program partners become clearer and defined additional consultation will be undertaken. They include;-

1. Ministry of Regional Development Authorities
2. Ministry of Water and Irrigation
3. National Irrigation Board
4. National Environment Trust Fund
5. Coast Water Development Authority
6. Lake Victoria North Water Services Board
7. Lake Victoria South Water Services Board
8. Athi Water Services Board
9. National Environment Management Authority
10. Irrigation Water Users Association (Lower Nzoia Irrigation Scheme)
11. Project Affected Persons in the Lower Nzoia Irrigation Scheme

Annex B. Stakeholders Issues and Concerns Summary

This section summaries the issues and comments contributed by stakeholders in response to an invitation to comment on the environmental impacts of the proposed Lower Nzoia Irrigation Scheme which is likely to be one of the key investments under WSCR. A consultation exercise was carried out with stakeholders during the Public Consultation. The comments and suggestions by stakeholders were made in focused group meetings. The report also includes the responses provided by members of the ESIA team and members of the Project Client team.

The comments have been categorized as follows:

COMMENTS RAISED	COMMENTATOR/S	RESPONSE
BIODIVERSITY		
Will the project have an impact on livestock and grazing areas?	Ouma Evans(Mau Mau)	There will areas provided for your livestock so don't worry
We are poor because of wild pigs, how will the project address this menace?	Aburu Buluma (Mau Mau)	This will be addressed in conjunction with KWS
How will they deal with wild pigs?	Boniface Asembo	
WATER		
Surface water supply and quality		
When there are floods will water in the canals affect people?	Omondi Otieno (Kabura Uhui)	The canals will have gates to control the flow of water.
Use windmill to pump water	Patrick Juma (Mau Mau)	
Groundwater supply and quality		
PROJECT		
When will the project start? How will the youth benefit from the project?	Osinya Ayamba Anyiso (Mau Mau)	Youth will benefit from employment.

COMMENTS RAISED	COMMENTATOR/S	RESPONSE
How will the world bank finance the project?	Erick Nkundi(Mau Mau)	It is a grant but there is need for the farmers to own the project through participation.
How is the compensation of those whose land will be cut the canals and infrastructure be effected?	Aburu Buluma(Mau Mau)	Those affected by major canals will have their cases addressed.
Is the project an extension of dominion farms?	Ouma Evans (Mau Mau)	
What are the methods of identifying project beneficiaries?	Juma Caroline (Mau Mau)	All of you will benefit from the project in one way or another, directly or indirectly.
Women grow crops but they are washed away by floods?	Margaret Atieno (Mau Mau)	
How will those affected by canal construction be compensated?	Boniface Asembo(Magombe)	
Will the world bank buy tractors for farmers?	Michael (Magombe)	No, need to work hard to uplift your standards and buy your own.
Recommend the project to implemented	William Osuri.	
Will you construct a new canal apart from the old existing ones?	David Ouma	This is a different project and new canals will have to be constructed.

COMMENTS RAISED	COMMENTATOR/S	RESPONSE
If canal passes through your farm will there be compensation? The team should try meeting all the stake holders along the river?	Dennis Ochieng (Nyadorera A)	
When will the project commence? If the canal passes in your farm and affects your project how will you deal with it?	Eric Ouma (nyadorera A)	The project has already started. We will deal with it by discussing with the affected persons and by using valuers, we will be able to compensate appropriately. You will have the right to appeal if you are not satisfied.
If the project stalls because of political interference or misuse of funds will the project be abandoned?	Rafael Owino (Kabura Uhui)	There will be workshops where you will be able to air your concerns. Any misuse of funds will be dealt with firmly.
What happens if you don't agree with the compensation of the project?	Lilian Omondi (Kabura Uhui)	There will be enough discussion with those affected and between the farmers who are supposed to own the project to avoid such a situation.
What is the size of the canal and its length from the river?	Rafael Akumu(Kabura Uhui)	The size of the canal will depend on the amount of water to convey and this is still in the engineering stage.
What size of land of our sub location will be used in the project?	Peter Omondi (Kabura Uhui)	We will know once survey is done, also the project is likely to end where topography changes and does not allow flow of water by gravity.
Is this project an experiment or has it been done elsewhere?	Dickson Nungu (Kabura Uhui)	This is a serious project and mostly depends on your commitment.
Is the project for Usonga people or for those only along the Nzoia river?	Meshach Ayeko	This project is collectively for the people of the lower Nzoia.
Those relocating will they be compensated?	John Odino (Nyadorera B)	Yes there will be compensation according to the value of property to be affected.

COMMENTS RAISED	COMMENTATOR/S	RESPONSE
Those not benefiting from the project directly, are there other ways?	Christopher Otieno(Nyadorera b)	You will be able to start business, work in farms, and transport produce.
Is the money from the World Bank a grant or a loan?	Margaret Opondo (Nyadorera b)	The money is a grant but people will have to show their commitment for the project to move on smoothly.
LAND		
Where is the land that you say you are going to implement the project?	Anastasia Laja	Your farms is what forms this project and they will managed by you.
How do you deal with those having ½, ¼ acres of land?	George Kanoti (Nyadorera B)	This people will be able to work in their farms and also provide workforce in other farms.
WATER RESOURCE AND FLOODS		
Water will flow from Nzoia by gravity and the area is low land, will it not flood? Stagnation of water will cause malaria?	William Osuri (Mau Mau)	
Sugar factories dispose chemicals into the river and it will affect the crops to be irrigated?	Patrick Juma (Mau Mau)	
Water logging in those areas that flood? Will canal pass through the areas that flood?	Gladys Aluanga	Survey has been done to address the issues of flooding.
During flooding of Nzoia River, canals will be conveying water what happens at that time?	Thomas Odipo	Canals will have gates to control flow of water.
When there are floods will water in the canals affect people?	Omodi Otieno	The canals will have gates to control the flow of water.

COMMENTS RAISED	COMMENTATOR/S	RESPONSE
EMPLOYMENT		
Development is good but the elderly are taking youth opportunities?	Christopher Wanja (Magombe)	The project is to benefit all.
How can we dig canal by hand?	Alfred Muyumba (Mugombe)	It will provide employment.
Those to work in the project where will they come from?	George Oketch	People from the project area will be given priority before those from other areas.
Which criteria will be used to select people for employment	Patrick Odiambo	You will be informed by the various committees that will be formed by you farmers.
OTHER ISSUES		
Will you help you help the people till the end when they start selling their produce? Will this project be finished?	Sylvester Nduasi (Sumba)	The project has been funded by the world bank and this should be able to complete the project.

Annex C. Format of Project Report As Required by NEMA

Environmental Impact Assessment and Audit Regulations (EIA/EA) - Legal Notice No.121 of 2003.

PART II - THE PROJECT REPORT

7. (1) A proponent shall prepare a project report stating -

- a) *The nature of the project;*
- b) *The location of the project including the physical area that may be affected by the project's activities;*
- c) *The activities that shall be undertaken during the project construction, operation and decommissioning phases;*
- d) *The design of the project;*
- e) *The materials to be used, products and by-products, including waste to be generated by the project and the methods of their disposal;*
- f) *The potential environmental impacts of the project and the mitigation measures to be taken during and after implementation of the project;*
- g) *An action plan for the prevention and management of possible accidents during the project cycle;*
- h) *A plan to ensure the health and safety of the workers and neighbouring communities;*
- i) *The economic and socio-cultural impacts to the local community and the nation in general;*
- j) *The project budget; and*
- k) *Any other information the authority may require.*

(2) In preparing a project report under this regulation, the proponent shall pay particular attention to the issues specified in the Second Schedule to these Regulations.

(3) A project report shall be prepared by an environmental impact assessment expert registered as such under these Regulations.

8. A proponent shall submit at least ten copies of the project report to the Authority or the Authority's appointed agent in the prescribed form accompanied by the prescribed fees.

Annex D. Format of ESIA Study Report

Environmental Impact Assessment and Audit Regulations (EIA/EA) - Legal Notice No.121 of 2003.

PART IV - THE ENVIRONMENTAL IMPACT ASSESSMENT STUDY REPORT

18. (1) A proponent shall submit to the Authority, an environmental contents of impact assessment study report incorporating but not limited to the environmental following information -

- a) *The proposed location of the project;*
- b) *A concise description of the national environmental legislative and regulatory framework,*
- c) *A concise description of baseline information,*
- d) *And any other relevant information related to the project; the objectives of the project;*
- e) *The technology, procedures and processes to be used, in the implementation of the project;*
- f) *The materials to be used in the construction and implementation of the project;*
- g) *The products, by-products and waste generated project;*
- h) *A description of the potentially affected environment;*
- i) *The environmental effects of the project including the social and cultural effects and the direct, indirect, cumulative, irreversible, short term and long-term effects anticipated;*
- j) *Alternative technologies and processes available and reasons for preferring the chosen technology and processes;*
- k) *Analysis of alternatives including project site, design and technologies and reasons for preferring the proposed site, design and technologies.*
- l) *An environmental management plan proposing the measures for eliminating, minimizing or mitigating adverse impacts on the environment; including the cost, time frame and responsibility to implement the measures;*
- m) *Provision of an action plan for the prevention and management of foreseeable accidents and hazardous activities in the cause of carrying out activities or major industrial and other development projects;*
- n) *The measures to prevent health hazards and to ensure security in the working environment for the employees and for the management of emergencies;*
- o) *An identification of gaps in knowledge and uncertainties which were encountered in compiling the information;*
- p) *An economic and social analysis of the project;*
- q) *An indication of whether the environment of any other state is likely to be affected and the available alternatives and mitigating measures; and*
- r) *Such other matters as the authority may require.*

Added components of the ESIA report to ensure World Bank (O P 4.01 Annex B) format is adhered to include;-

- 1. Section on institutional capacity*
- 2. Section on capacity building*
- 3. Section on consultation*

(2) The environmental impact assessment study report shall be accompanied by a non-technical summary outlining the key findings, conclusions and recommendations of the study and shall

be signed by the proponent and environmental impact assessment experts involved in its preparation.

19. A proponent shall submit ten copies and an electronic copy of an environmental impact assessment study report to the Authority in Form 1B set out in the First Schedule to these Regulations accompanied by the prescribed fees.

Annex E. SAMPLE TERMS OF REFERENCE (TOR) FOR AN ENVIRONMENTAL & SOCIAL IMPACT ASSESSMENT FOR WATER RELATED PROJECTS

1. Objectives of the ToR

This section should state the scope of the ESIA in relation to the screening category, and identify the geothermal project the ESIA will apply to. It should prescribe the process and its timing of project preparation, design, and implementation stages in order to adequately address Bank safeguards issues. Further, it should identify constraints (adequacy of existing baseline data and need for additional data) and provide an exact development schedule.

2. Background Information

The ToR should provide pertinent background for preparing the ESIA. This would include a brief description of:

- Statement of the project objectives,
- Implementing agency/sponsor and their requirements for conducting an ESIA,
- Project components, especially those that will finance subprojects;
- Anticipated types of subprojects/components, and what types will not be financed by the project;
- Areas of influence to be assessed (description plus good map)
- Summary of environmental/social setting
- Applicable Bank safeguards policies, and consequent Project preparation requirements, as specified in the approved ISDS.

The ToR should also include a brief history of the project, including alternatives considered, its current status and timetable, and the identities of any associated projects. Also include a description of other project preparation activities underway (e.g., legal analysis, institutional analysis, economic analysis, social assessment, baseline study) since the consultant preparing the ESIA will need to coordinate with other teams to ensure an effective and efficient information exchange.

3. EA Requirements/Regulations

This paragraph should identify any regulations and guidelines which will govern the conduct of the assessment or specify the content of its report. They may include any or all of the following:

- National laws and/or regulations on environmental assessments;
- Regional, provincial or communal environmental assessment regulations;
- Environmental assessment regulations of any other financing organizations involved in the project.
- Relevant international environmental agreements/conventions to which the country is party
- World Bank Operational Policies 4.01 "Environmental Assessment," 4.04 "Natural Habitats", 4.11 "Cultural Property", 4.12 "Involuntary Resettlement", 4.10 "Indigenous People" and other pertinent operational policies and Guidelines.

4. Study Area and Likely Major Impacts

Specify the area involved and the boundaries of the study area for the assessment (e.g., water catchment). Where appropriate specify the right-of-way (ROW)-width and alignment for pipelines. Similarly, specify locations for transmission substations, pumps.

Identify adjacent or remote areas which should be considered with respect to impacts of particular aspects of the project.

5. Scope of Work

In some cases, the tasks to be carried out by a consultant will be known with sufficient certainty to be specified completely in the terms of reference. In other cases, information deficiencies need to be alleviated or specialized field studies or modelling activities performed to assess impacts, and the consultant will be asked to define particular tasks in more detail for contracting agency review and approval.

Task 1. Description of the Proposed Project. Provide a brief description of the relevant parts of the project, using maps (at appropriate scale) and including the following information: location of all project related development sites and ROW's, including offsite investments; general layout; flow diagrams/drawings of facilities/operation design basis, size, capacity, flow-through of unit operations, including pollution control technology; pre-construction activities; construction activities; schedule; staffing and support; facilities and services; commissioning, operation and maintenance activities; required offsite investments; and life expectancy for major components. [Note: there may be particular types of information appropriate in the description of the project category you are concerned with. Please specify them here.]

Include the need for any resettlement plan or indigenous people development plan.

Provide maps at appropriate scales to illustrate the general setting of project-related development sites and ROW's, as well as surrounding areas likely to be impacted. These maps should include topographic contours, as available, as well as locations of major surface waters, roads, railways, town centers, parks and reserves, and political boundaries. Also provide, as available, maps to illustrate land use, including industrial, residential, commercial and institutional development, agriculture, etc.

Task 2. Description of the Environment (baseline condition). Assemble, evaluate and present baseline data on the relevant physical, biological, and socio-economic characteristics of the development area and area of influence. Include information on any changes anticipated before the project commences. [Annotate or modify the lists below to show the critical information for this project category, or that which is irrelevant to it. You should particularly avoid compiling irrelevant data.]

- a.) Physical environment: geology (e.g., stratigraphy and seismic history of development areas, integrity of geological layers protecting portable groundwater supplies); topography (e.g., drainage patterns around construction areas); soils (e.g., agricultural value); climate and meteorology; ambient air quality; existing sources of air emissions; surface and ground-water hydrology (e.g., soil erosion and sedimentation potential, flood hazard potential); water resources (e.g., adequacy of water supply) coastal and oceanic parameters; existing water pollution discharges, and receiving water quality (e.g., ability to assimilate effluent discharges and maintain water quality standards for desired uses).
- b.) Biological environment: flora (e.g., types and diversity); fauna (e.g., resident and migratory); rare or endangered species within or in areas adjacent to project related development sites or ROW's; sensitive habitats, including parks or preserves, significant natural sites, etc.; species of commercial importance; and species with potential to become nuisances, vectors or dangerous.
- c.) Socio-cultural environment (include both present and projected where appropriate): population; land use (e.g., year-round and seasonal); planned development activities;

community structure; employment; distribution of income, goods and services; recreation; public health; cultural properties (e.g., archeological and historically significant sites); indigenous peoples and traditional tribal land; and customs, aspirations and attitudes.

Task 3. Legislative and Regulatory Considerations. Describe the pertinent regulations and standards governing environmental quality, health and safety, protection of sensitive areas, protection of endangered species, siting, land use control, etc., at international, national, regional and local levels (The TOR should specify those that are known and require the consultant to investigate for others.) If transboundary impacts are likely, relevant international conventions should be described.

Task 4. Determination of the Potential Impacts of the Proposed Project. Predict and assess all significant impacts that the project is likely to generate, in quantitative terms as far as possible. Assess the impacts from changes brought about by the project on baseline environmental conditions as described under Task 2.

In this analysis, distinguish between significant positive and negative impacts, direct, indirect, and cumulative impacts, and immediate and long-term impacts. Identify impacts that may occur due to accidental events. Identify impacts which are unavoidable or irreversible. Wherever possible, describe impacts quantitatively, in terms of environmental costs and benefits. Assign economic values when feasible. Impact analyses for sub projects should be divided between construction impacts and operational impacts.

Characterize the extent and quality of available data, explaining significant information deficiencies and any uncertainties associated with predictions of impact. If possible, give the TOR for studies to obtain the missing information. [Identify the types of special studies likely to be needed for this project category.] For information not be obtainable until after execution, provide TOR for studies to monitor operations over a given time period and to modify designs and/or operational parameters based upon updated impact analysis.

Task 5. Analysis of Alternatives to the Proposed Project. Describe alternatives that were examined in the course of developing the proposed project and identify other alternatives which would achieve the same objectives. The concept of alternatives extends to siting, design, technology selection, construction techniques and phasing, and operating and maintenance procedures. Compare alternatives in terms of potential environmental impacts; capital and operating costs; suitability under local conditions; and institutional, training, and monitoring requirements. When describing the impacts, indicate which are irreversible or unavoidable and which can be mitigated. To the extent possible, quantify the costs and benefits of each alternative, incorporating the estimated costs of any associated mitigating measures.

Include the alternative of not constructing the project to demonstrate environmental conditions without it. Alternatives should include the following: the “no action” alternative (as mentioned above); alternative means of meeting the energy requirements; the alternative of upgrading existing facilities; alternative routes and sites; alternative design; and alternative methods of construction, including costs and reliability.

Task 6. Development of an Environmental Management Plan (EMP). Recommend feasible and cost-effective measures to prevent or reduce significant negative impacts to acceptable levels. Include measures to address emergency response requirements for accidental events.

Estimate the impacts and costs of those measures, and of the institutional and training requirements to implement them. Consider compensation to affected parties for impacts which cannot be mitigated. Prepare a management plan including proposed work programs, budget estimates, schedules, staffing and training requirements, and other necessary support services to implement the mitigating measures. Provide environmental protection clauses for application by contractors and consultants.

The ToR should state that the concerned and affected parties should agree mitigating measures before they are submitted as recommendations in the EMP

Task 7. Identification of Institutional Needs to Implement Environmental Assessment Recommendations. Review the authority and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management and monitoring plans in the environmental assessment can be implemented. The recommendations may extend to new laws and regulations, new agencies or agency functions, intersectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Task 8. Development of a Monitoring Plan. Prepare a detailed plan to monitor the implementation of mitigating measures and the impacts of the project during construction and operation. Include in the plan an estimate of capital and operating costs and a description of other inputs (such as training and institutional strengthening) needed to implement the plan.

Depending upon local conditions and predicted impacts upon communities/individuals, there may be a need for a Resettlement Action Plan.

Task 9. Assist in Inter-Agency Coordination and Public/NGO Participation. Assist in coordinating the environmental assessment with other government agencies, in obtaining the views of local NGO's and affected groups, and in keeping records of meetings and other activities, communications, and comments and their disposition. (The Terms of Reference [TOR] should specify the types of activities; e.g., interagency scoping session environmental briefings for project staff and interagency committees, support to environmental advisory panels, public forum.). Review the authority and capability of institutions at local, provincial/regional, and national levels and recommend steps to strengthen or expand them so that the management or monitoring plans in the environmental assessment are likely to be implemented. The recommendations may extend to new laws and regulations, new agencies or agency functions, intersectoral arrangements, management procedures and training, staffing, operation and maintenance training, budgeting, and financial support.

Relevant material will be provided to affected groups in a timely manner prior to consultation and in a form and language that is understandable and accessible to the groups being consulted. The consultant should maintain a record of the public consultation and the record should indicate: means other than consultations (e.g., surveys) used to seek the views of affected stakeholders; the date and location of the consultation meetings, a list of the attendees and their affiliation and contact address: and summary minutes.

6. Report.

The environmental assessment report should be concise and limited to significant environmental issues. The main text should focus on findings, conclusions and recommended actions, supported by summaries of the data collected and citations for any references used in interpreting those data. Detailed or uninterpreted data are not appropriate in the main text and should be presented in appendices or a separate volume. Unpublished documents used in the assessment may not be readily available and should also be assembled in an appendix. Organize the environmental assessment report according to the outline below. *(This is the format suggested in OP4.01; the ToR may specify a different one to satisfy national agency requirements as long as the topics required in the Bank's OP are covered)*

- Executive Summary
- Policy, Legal and Administrative Framework
- Description of the Proposed Project
- Baseline Data (Description of the Environment)
- Significant Environmental Impacts
- Analysis of Alternatives
- Environmental Management Plan
- Environmental Management and Training
- Environmental Monitoring Plan
- Inter-Agency Coordination and Public/NGO Participation
- Appendices: List of Environmental Assessment Preparers References Record of Interagency/Forum/Consultation Meetings (This is the format suggested in OD 4.01; the TOR may specify a different one to satisfy national agency requirements as long as the topics required in the Bank's directive are covered.)

7. Consulting Team

Environmental assessment requires interdisciplinary analysis. The general skills required of an environmental assessment team are: environmental management planning, ecology, hydrology/hydrogeology, and water quality analysis.

(Identify in this paragraph which specializations ought to be included on the team for the particular project category.)

Note: The team will be required to work closely with specialists undertaking the social analysis and to define arrangements for the final report, especially if the EA and social analysis are to be combined in one report.

8. Services, Facilities and Materials to be provided by the Client

The ToR should specify what services, facilities and materials will be provided to the Consultant by the World Bank and the Borrower, for example:

- The Project ISDS and draft PAD;
- Relevant background documentation and studies;
- Example ESMFs that demonstrate best practice, especially from the region or country;
- Making all necessary arrangements for facilitating the work of the Consultant and to provide access to government authorities, other Project stakeholders, and Project sites.

10. Schedule and Deliverables

Specify dates for the consultancy deliverables (e.g. detailed work plan within 2 weeks, interim report within 7 weeks, and final draft report within 10 weeks of contract signature), and the overall duration of the consultancy (e.g. 15 weeks from contract signature).

11. Technical Proposal Contents

The ToR should require a technical proposal that at least:

- Demonstrates that the Consultant understands the overall scope and nature of the ESIA preparation work, and what will be required to respond satisfactorily to each component of the ToR;
- Demonstrates that the Consultant and his proposed team have relevant and appropriate experience to carry out all components of the ToR. Detailed curriculum vitae for each team member must be included;
- Describes the overall methodology for carrying out each component of the ToR, including desk and field studies, and data collection and analysis methods; and
- Provides an initial plan of work, outputs, and staff assignments with levels of effort by task.

12. Budget and Payments

The ToR should indicate if there is a budget ceiling for the consultancy. The ToR should specify the payment schedule (e.g. 10% on contract signature, 10% on delivery of detailed work plan, 40% on delivery of interim report, 30% on delivery of final draft ESIA, and 10% on delivery of final ESIA).

8. Other Information

Include here lists of data sources, project background reports and studies, relevant publications, and other items to which the consultant's attention should be directed.

Annex F: Format of an Annual Environmental Report

Environmental Authority:							
Reporting dates:							
District/County:							
Sub projects approved:							
Project Investment Title	Activities	Project phase ⁽¹⁾	Environmental Category	ESIA / ESMP completed?	Environmental Permit granted?	Effectiveness of ESMP	Issues ⁽²⁾
(name, location, title or reference)	(new construction, rehabilitation, maintenance)	See note below	(A, B or C)	Yes, No or N/A	Yes, No or N/A	Good, poor, or needs improvement	See note below
1							
2							
3							
etc							
Sub projects rejected:							
Subproject title	Activities	Reasons for rejection			Remarks ⁽³⁾		
1							
2							
etc							